

Dental Digest

Forty-fifth Year of Publication

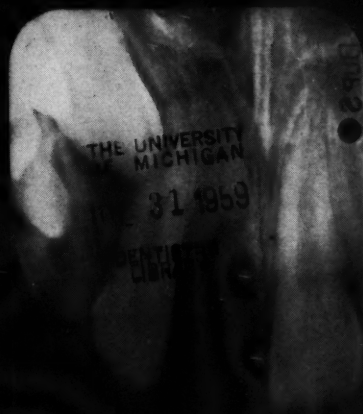
July 1959

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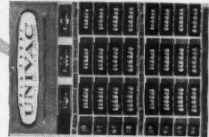


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CHARLES A. PRIEST, B.S. (Marion Normal

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and has published several articles on this subject. Doctor Priest's first article in DIGEST is IMMEDIATE DENTURE CONSTRUCTION WITHOUT SUTURES.

The Management of TRAUMATIC INJURIES

by Replantation

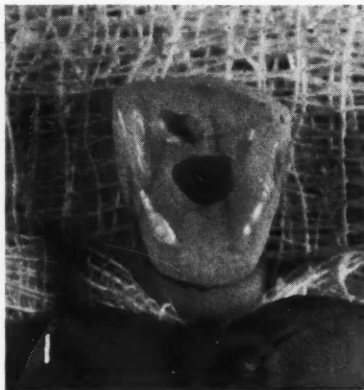
E. JAMES BEST, D.D.S.,* and NORMAN H. OLSEN, D.D.S., M.S.D.,**
Evanston, Illinois

DIGEST

This article is a step-by-step presentation of a procedure for the recovery of a luxated tooth in a young patient. Some authors have observed the life-span of a replanted tooth to be from a few months to fifteen years; a recorded case has been retained thirty-four years. The importance of immediate treatment in these cases, whether the tooth is partly dislodged or completely detached, cannot be overemphasized as an important aid to a hopeful prognosis.

Essential Factors in Luxation Procedures

The treatment for luxation of a permanent anterior tooth in a young patient requires immediate attention. Incomplete dislodgment of the tooth, either partial intrusion or extrusion, can be managed by the prompt re-



1.
The tooth is immersed in a cold sterilizing solution, such as Zephiran® Chloride, and removed with a sterile forceps. It should be placed in gauze surgical packs to avoid contamination from the hands during instrumentation (Fig. 1).

2, 3, and 4.
Radiographs taken during treatment of the tooth discussed in Case Report One.

positioning of the injured tooth into its former place in the dental arch.

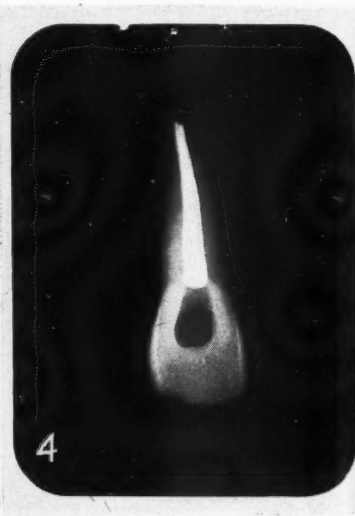
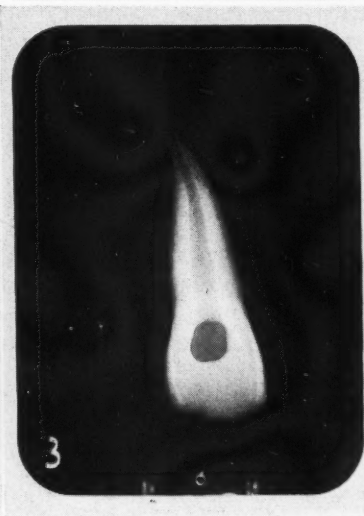
Splint may be Used—The prognosis of a repositioning operation is enhanced by fixation or splinting with a retaining appliance. Many times injuries to the pulp will be resolved favorably and the vitality will return to normal. The progress of rehabilitation can be accurately determined with the assistance of a vitalometer and radiographs.

Total Luxation—When the tooth is completely devoid of periodontal attachment, the clinical problem is of the gravest importance. The construction of a fixed or removable prosthesis usually produces discouraging results since the surrounding teeth, because of immature eruption, are inadequate as abutments. Furthermore, periodic replacements must be made

Author's Note: John F. McLean, D.D.S. constructed the appliance shown in Case Report One. The authors wish to express their appreciation to Doctor McLean.

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5, 6, and 7.

The patient before and immediately after the replantation operation.

to accommodate the growth and development of the jaws. It would seem expedient, therefore, to make every effort to replace the luxated tooth by replantation.

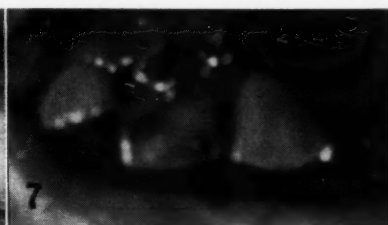
Many Techniques Available—Replantation procedures have been attempted since the inception of dentistry. The techniques described in the literature are many and varied. Grossman¹ states that the average life-span of a replanted tooth varies from a few months to fifteen years. Baker² reports a case on record that has been retained for thirty-four years.

Clinical Procedure

Preparation of the Tooth—1. The tooth should be cleaned with a brush and soap and water.

2. The tooth is immersed in a cold sterilizing solution, such as Zephiran® Chloride, and removed with a sterile forceps. It should be placed in gauze surgical packs to avoid contamination from the hands during instrumentation (Fig. 1).

3. A lingual opening is made and the pulpal tissue is extirpated with a barbed broach. Biomechanical prepa-



ration is completed using various sizes of reamers and files until the canal has been enlarged to its proper dimensions.

4. Irrigation is employed, using a solution, such as Micro-Cide A³, to facilitate the removal of pulpal and dentinal debris. The cementum should be periodically moistened with this solution to minimize dehydration.

5. The root canal is filled with gutta-percha and a root canal sealer utilizing a lateral condensation technique⁴. The excess filling material ex-

8, 9, and 10.

X-rays taken at intervals of one hour, forty-eight hours, and six months after clinical procedure.

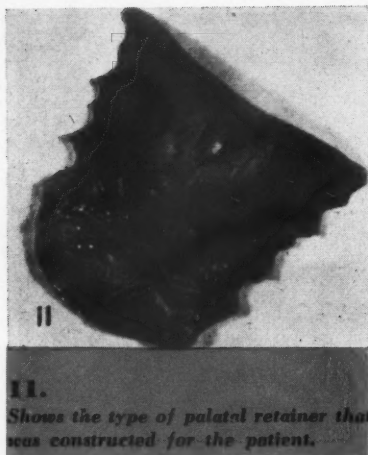


¹Grossman, Louis, *Root Canal Therapy*, ed. 4, Philadelphia, Lea and Febiger, 1955, p. 379.

²Baker, C. R.: Personal communication.

³Best, E. J., and Gurney, B. F.: A New and Superior Endodontal Bacteriocidal Agent, Part 2, *J. Oral Surg., Oral Med., and Oral Path.* 12:222-228 (Feb.) 1959.

⁴Sommer, Ralph F.: Essentials for Successful Root Resection, *Am. J. Orthodontics* 32:76 (July) 1946.



3. The tooth should be thoroughly washed with sterile saline solution.
4. The tooth should be slowly introduced into the socket until it has been replaced in its original position.

Clinical Discussion

During the clinical procedure avoid using alcohol or hydrogen peroxide solutions since they will tend to further dehydrate the cementum of the tooth. The prognosis for retention will be more favorable if the following principles are observed:

1. Inaugurate treatment as soon as possible after the injury.

2. Complete the endodontic procedures using an aseptic technique.
3. Administer antibiotics to eliminate any preoperative or postoperative infection.
4. Prescribe antihistamines to control swelling and cellulitis.
5. Eliminate all occlusal disharmonies with the replanted tooth.
6. Construct a retaining device if the tooth is mobile.

Comment

Eventually the root may resorb. With a sound clinical program, however, the maximum retention of the



12 and 13.

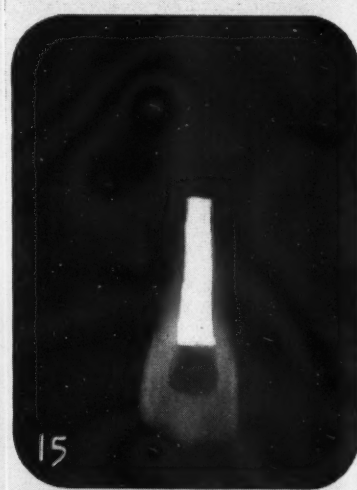
Photographs taken of the patient six months later with the appliance in place and removed.

tending beyond the apex should be removed with a heated instrument. The tip of the root should be planed to remove all sharp protrusions.

6. A lingual silicate cement restoration is inserted. When the silicate has hardened, the tooth can be placed in Micro-Cide A solution while the patient is being prepared for the replantation.

Preparation of the Patient—1. An anesthetic will usually be required. If a local anesthetic is administered only a minimal amount should be injected so that additional swelling is not induced.

2. The clot in the alveolus should be gently removed as well as any debris that may have entered the socket.



14 and 15.

Radiographs taken of the patient in Case Two during treatment of the tooth.



16.
Shows the tooth after replantation with a labial arch wire adapted.

injured tooth may be achieved. If the original dentition of the patient remains intact until adulthood, a satisfactory appliance may be constructed if it is required. In the intervening years of growth and development a valuable service has been rendered by replantation.

Case Report One

A boy aged 9½ years collided with a tree while going downhill on a sled. Complete luxation of a tooth occurred. He was treated at a hospital for facial lacerations and sent home. Dental treatment was delayed for twenty-four hours while a search was conducted for the missing tooth. It was eventually found in the snow at the site of the accident. Figures, 2, 3, and 4 are radiographs taken during the treatment of the tooth.

Postoperative Progress Illustrated

—Figures 5, 6, and 7 show the patient before and immediately after the replantation operations.

Figures 8, 9, and 10 are x-rays taken at intervals of one hour, forty-eight hours, and six months after the clinical procedure.

Exfoliation Beneficial—In Figure 9 note that the tooth exfoliated approximately 1 millimeter out of the socket. Since the patient was a candidate for orthodontic treatment, this proved to be most beneficial.

Palatal Retainer Constructed—Fig-

ure 11 illustrates the type of palatal retainer that was constructed for the patient. Figures 12 and 13 are photographs taken of the patient six months later with the appliance in place and removed.

Case Report Two

A girl of 7 fell from a swing while playing and one tooth was luxated. Replantation treatment was started five hours after the accident.

Progress Shown During Treatment—Figures 14 and 15 are radiographs taken of the case during the treatment of the tooth.

Labial Arch Wire Adapted—Fig-

ure 16 shows the tooth after replantation with a labial arch wire adapted. The arch wire was ligated to the maxillary right and left permanent first molars and the right central incisor. Since the tooth was firmly replanted, the appliance was removed in ninety-six hours.

Postoperative Progress—Figures 17 and 18 are x-rays taken at intervals of four months and one year after the replantation. Figure 19 is a photograph of the patient taken one year after the accident.

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1580 Sherman Avenue (N.H.O.)



17 and 18.
X-rays taken at intervals of four months and one year after the replantation.



19.
A photograph of the patient in Case Two taken one year after the accident.

The Simple ALL-ACRYLIC

Partial Denture - Part One

K. P. Liddelaw, F.D.S., R.C.S. (Eng.), H.D.D. (Edin.), London

DIGEST

Except in a limited number of situations or for a limited time, the all-acrylic partial denture is a dental hazard. However, because the question of cost has an important bearing on the selection of the material to be employed in the construction of a partial denture, in a majority of practices the simple all-acrylic partial denture will continue to be produced in large numbers. This article, therefore, is a consideration of this commonly employed appliance and presents an assessment of the problems involved in the all-acrylic partial denture.

Requirements of a Successful Denture

A number of requirements are applicable to any partial denture:-

(a) The advantage it confers on the patient should considerably outweigh the disadvantage of the damage it does to the mouth tissues.

(b) It should be so constructed that it fits the mouth accurately: it should go into place without any grinding or fitting and when in place should fit both the hard and soft tissues with which it is in contact.

(c) The occlusion of both the natural and artificial teeth should be balanced at least in the position of centric occlusion and only a small amount of spot-grinding should be necessary to bring this about.

Improper Design Encountered—In many cases the minimal desirable requirements are not met and partial

acrylic dentures are frequently merely arbitrary expanses of "gum-stripping acrylic" with a few artificial teeth attached in the edentulous areas (Fig. 1).

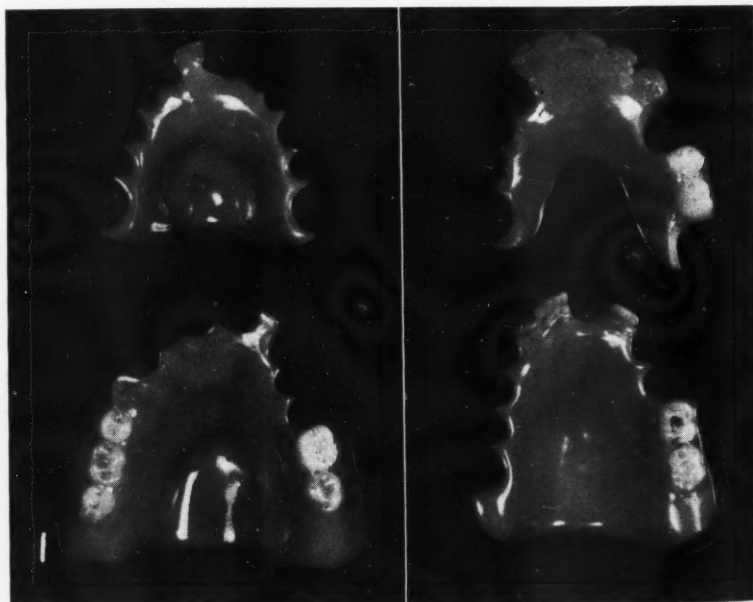
Results of Excessive Grinding—A carelessly designed denture frequently will not go into place when the first attempt is made to fit it in the mouth. Grinding to ease improper fit, at first gentle and controlled, becomes more vigorous and less controlled as time is consumed. When at last the denture is in position it may be found that (a) it is a poor fit around several standing teeth where acrylic has been removed unnecessarily in the haste of trying to force the denture into place (Fig. 2), (b)

the bite is open which requires more grinding, and (c) the patient may be dismissed with the instruction to let the denture settle.

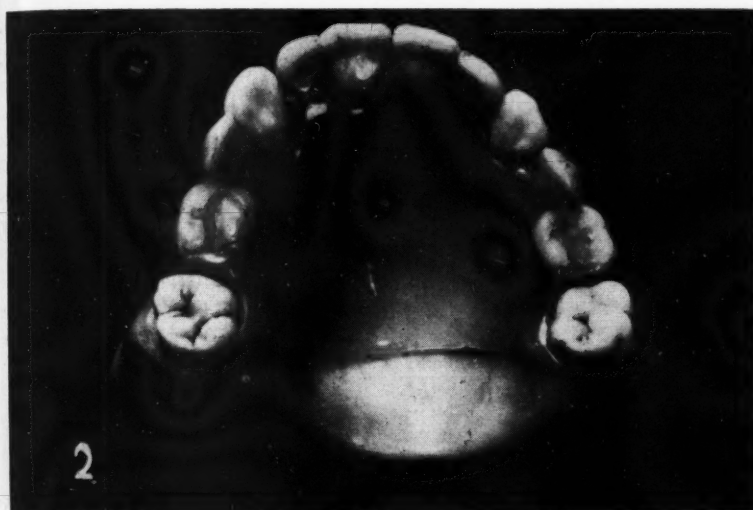
Hazards of Poorly Constructed Appliance—An appliance that should have enabled the patient to (1) masticate better, (2) enhance his appearance, and (3) prevent further collapse or over-eruption of the remaining natural teeth has become a means of destruction, destroying by its poor fit and uneven occlusion gingival attachments and mucous membrane and ultimately alveolar bone.

Two-Part Problem—The problem of the simple acrylic denture can be resolved into two parts:

(A) The first is design, simple but purposeful design aimed at producing an appliance which does the maximum amount of good and the minimum of harm.



1. A selection of "gumstripping" dentures.



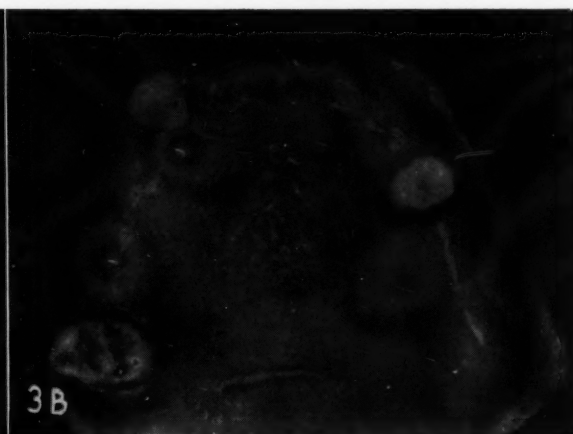
2.
Note the ill-fit around the standing natural teeth producing spaces down which food can pack on to the gingival margins.

(B) The second is a problem of construction aimed at producing an appliance which goes into place without adjustment and so fits and occludes properly.

Possibility of Ill-Effects

For simplification of this article and because a large number of such dentures do not have clasps, the simple acrylic partial denture is assumed to have no metal clasps for retention. The possible damage is of four kinds (Fig. 3, A and B):

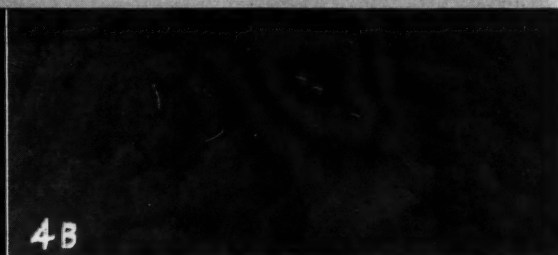
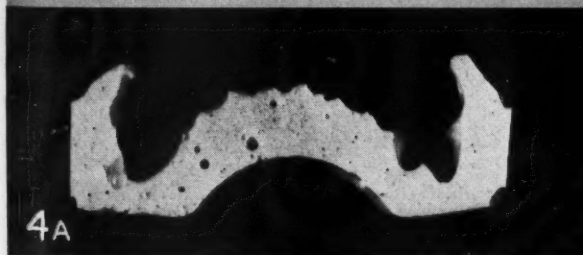
- (1) To the mucous membrane generally.
- (2) To the gingival margins specifically, leading in time to severe damage to the supporting structures of the teeth.



3A and 3B.

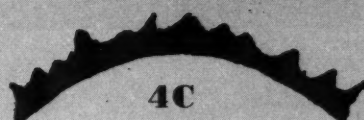
Illustrating the types of damage which a partial acrylic denture may cause to the palate, teeth, and gingival margins. (Fig. 3A) Note the stripping of three gingival margins

around the upper right cuspid and second molar. (Fig. 3B) Note the inflamed and hyperplastic palate and the swollen margins distal to the upper left second bicuspid and mesial to the right molar.



4A, 4B, and 4C.

(4A) Cross section of an alginate impression depicting the sharp detail which it copies. (4B) Silhouette of cross section of denture made to model



cast from alginate impression illustrated in Figure 4A. (4C) Granular case of hyperplasia which a denture such as that shown in Figure 4B will ultimately cause.



5.
A positive reaction after forty-eight hours on the forearm of a patient subjected to a patch test with a piece of polymerised acrylic resin.

(3) To the bone of the edentulous alveolar ridge.

(4) To the hard tissues of the teeth.

Tissue-Borne Denture—All simple acrylic dentures are tissue borne and transmit the load to the bone via the mucous membrane during mastication.

Damage to the Mucous Membrane—This can occur in the following ways:

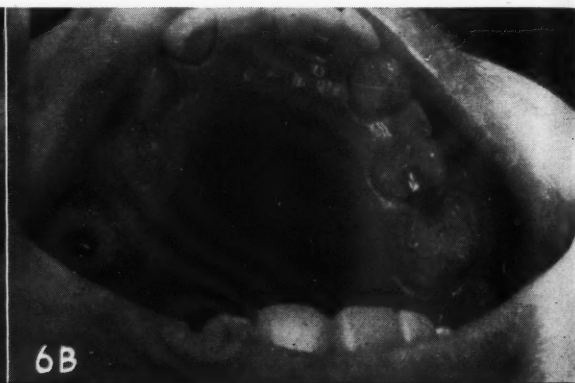
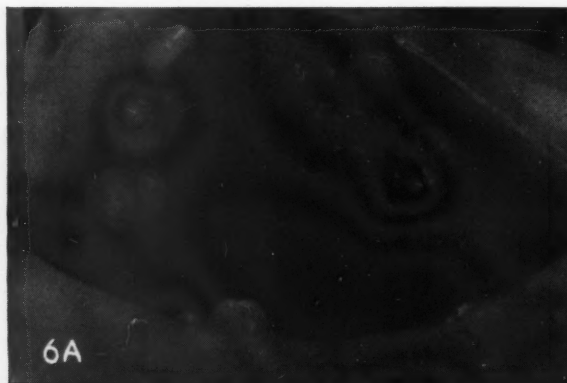
(1) By failing to cover a sufficiently large area of the supporting tissues, thus overloading the area which is covered.

(2) By fitting a denture which is

insufficiently supported either by bracing against the natural teeth or the lateral slopes of the ridges, causing trauma to the mucous membrane by friction.

(3) By fitting a denture which opens the bite. This results in the entire load being taken on the denture, with little or none on the natural teeth. The consequence is a severe overload on the mucous membrane and the underlying edentulous alveolar ridge.

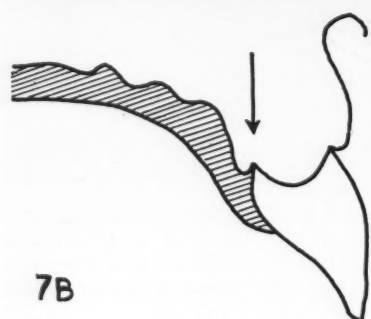
(4) By gross cuspal interference or locking. This results in a drag being applied to the denture which inflicts traumatic damage to the area.



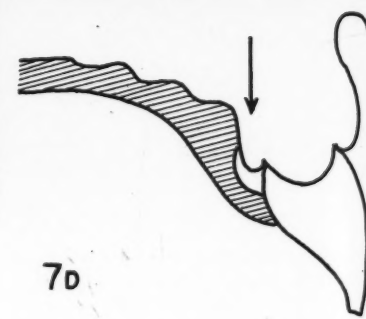
6A and 6B.

(Fig. 6A) Inflammation of the palate caused by roughness

of the fitting surface and movement of the denture. (Fig. 6B) The denture which caused the palatal condition is shown.



7A, 7B, 7C, and 7D.
(Fig. 7A) A sharp damaging gingival margin of a denture. (Fig. 7B) Illustrates how the denture fits against the gingival tissues. (Fig. 7C) Illustrates how sharp margins should be trimmed and polished. (Fig. 7D) Illustrates how a trimmed denture margin will be free of the gingival tissues.



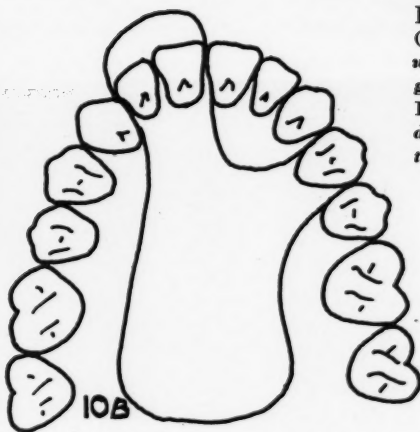
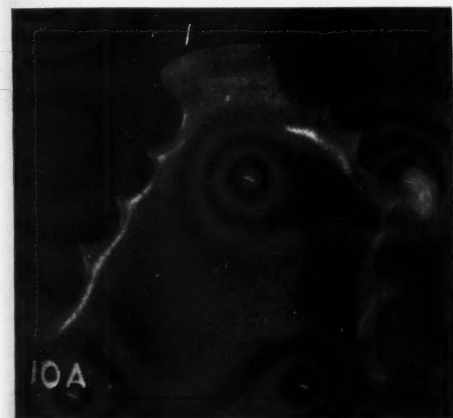
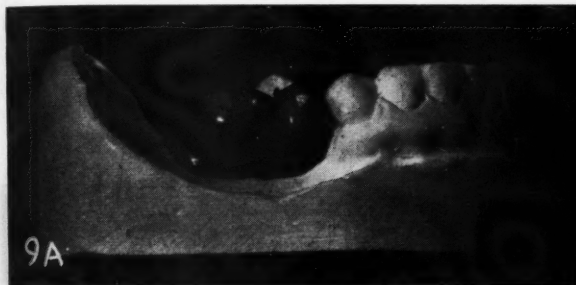
8.

Left: Illustrates a space between tooth and denture into which food will be forced upon pressure. Right: Illustrates close fit of denture against tooth just above its most bulbous part, thus directing food on to the denture and not on to the gingival margin.



9A and 9B.

(Fig. 9A) Deficient extension of saddle. (Fig. 9B) More suitable extension of saddle.

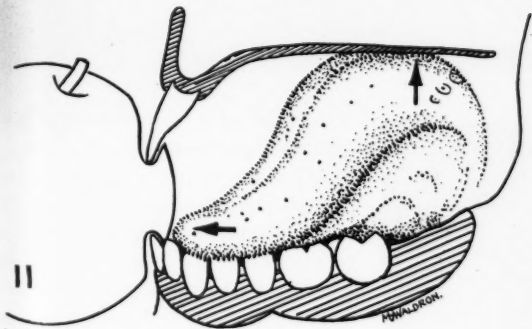


10A and 10B.

(Fig. 10A) Upper denture which has had no thought given to its design. (Fig. 10B) A possible alternate design for denture illustrated in Figure 10A.

12.

Extension of palate posteriorly to assist tongue control.



11.

Illustrates how the tongue controls a denture.



13.

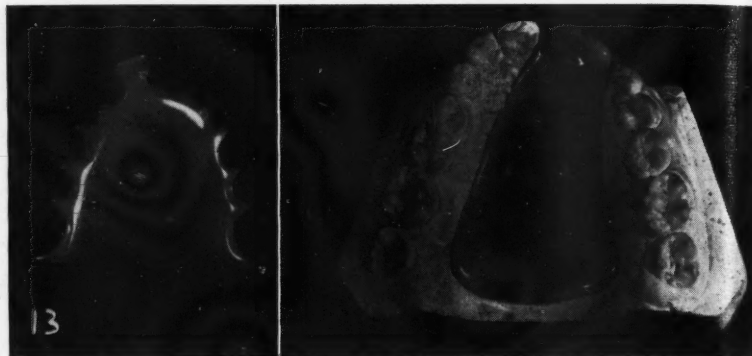
(A) Another thoughtless "gumstripper". (B) Illustrates a similar type of case in which a denture may be designed which frees many gingival margins.

ment of a tissue-borne denture is normal) will tend to cause the fitting part of the denture to act rather like a blade cutting into the margin (Fig. 7).

(2) Any failure of fit of the denture around a standing natural tooth will leave a space down which food will be driven under full masticatory force directly on to the gingival margin. Such a denture might in fact be thought to have been designed specifically to direct food on to the gingival margin.

(3) The hard tissues of the teeth may suffer caries by food being held in contact with them due to an ill fit or roughness of the surface.

(4) The supporting tissues of the teeth may be damaged by excessive



lateral or anteroposterior load applied via the denture or by using teeth for lateral or anteroposterior bracing where the attachment is insufficiently robust to withstand the load applied to it.

Design

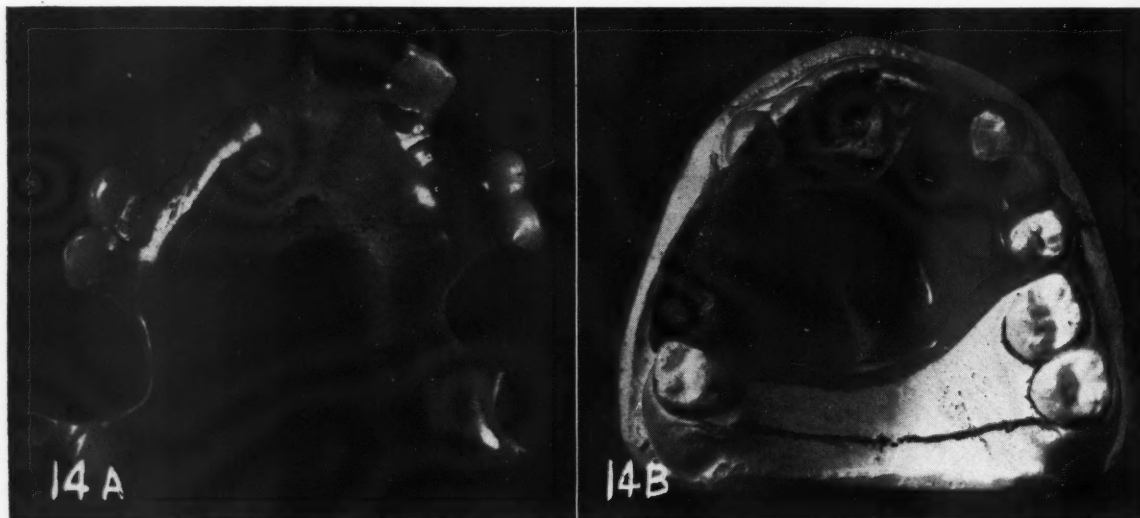
Certain maxims are fundamental in designing the simple acrylic partial denture:

(1) As large an area as possible of

the alveolar ridge must be covered to ensure that the load applied during mastication is widely spread.

(2) Buccal, lingual, and labial flanges must be extended to the full depth of the respective sulci so that adequate bracing against lateral and anteroposterior stresses is ensured.

(3) Gingival margins should remain uncovered unless the bracing needs require them to be covered and then it should be ensured that no



14A and 14B.

(Fig. 14A) Improper design. (Fig. 14B) Improved design.

15.

A design which frees the gingival margins for a lower denture carrying the four anterior teeth.

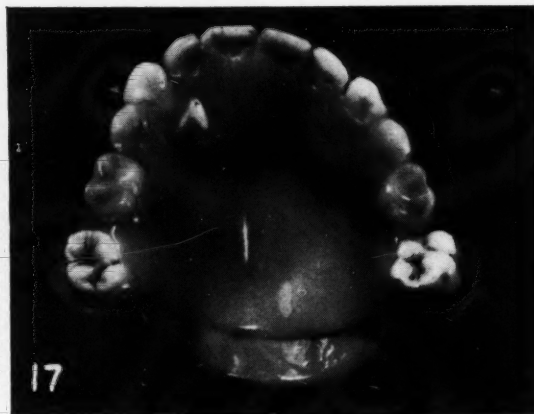


acrylic is in contact with the gingival margin.

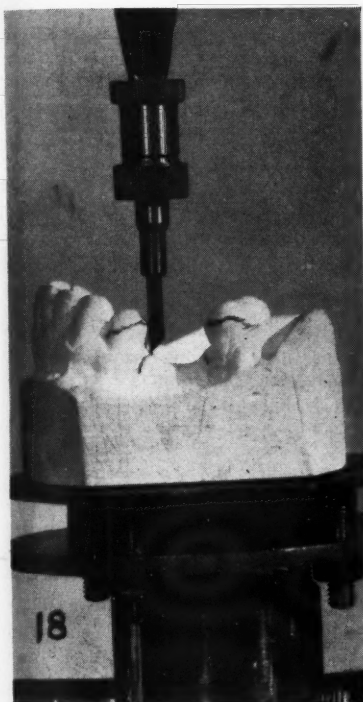
(4) Where it is necessary to cover a gingival margin the contact of the denture with the natural tooth must be such that no food can pack down between the tooth and the denture. This is illustrated in Figure 2. Figure 17 shows a denture which is the antithesis of that shown in Figure 2 and illustrates the close contact of the denture with the teeth so that food



16.
An acrylic lingual bar and a "gum-stripper."



17.
Compare the fit of the denture around the standing natural teeth with that in Figure 2. In Figure 17 no spaces exist into which food can pack.



18.
Surveyor in use defining an undercut.

Surveying

If a simple acrylic denture is to fit the mouth with no grinding, it must be surveyed. Trimming at the chairside before the denture can be inserted in the mouth is bound to be inaccurate and to result in gaps between the natural teeth and the denture. Surveying is not new in dental procedure but after many years is still considered by some operators merely as a means of padding out the dental course. In practice, however, it is a device which, if properly used, saves many chairside hours in the course of a year and results in partial dentures which can be inserted easily and fit well when in place.

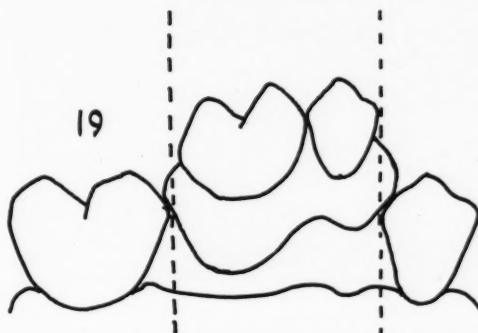
Undercut Areas Defined—The use of surveying in connection with the simple acrylic partial denture is to define all the undercut areas which exist on the model (Fig. 18). Some of these undercut areas will be employed for retaining the denture, that is, the denture will be designed to be inserted into the undercuts, but other undercuts not to be employed for retention must be blocked out with

plaster of paris because if the denture is made to fit into them it will not go into place in the mouth until these parts of the denture have been removed by trimming with stones (Fig. 19).

Model is Tilted—The model is tilted so that the undercuts selected for retention are eliminated by the tilt, that is, the surface of the tooth below the most bulbous part is made parallel with the surveying pencil. By this means new undercuts may be created and others accentuated. These latter must be blocked out so that no acrylic is processed into them (Fig. 20, A and B).

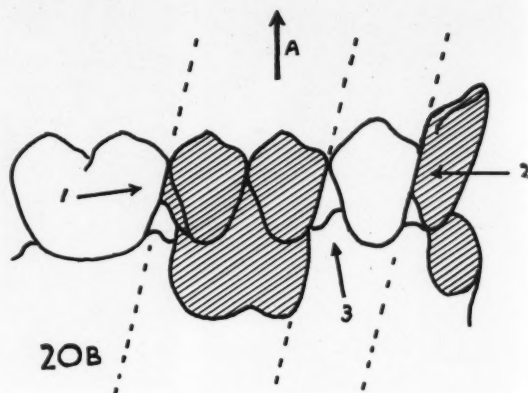
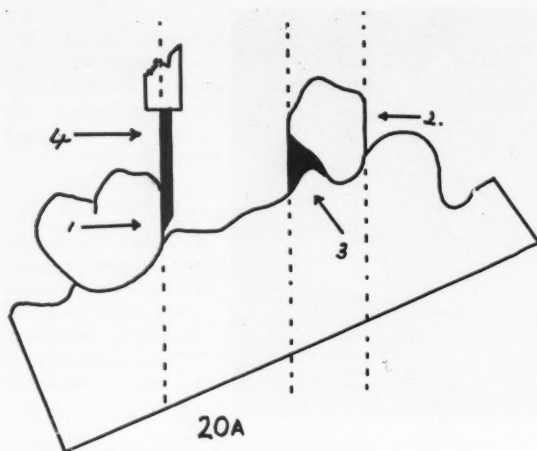
Art of Surveying Rapidly Acquired—A tilt of the model is selected which will produce a line of insertion which will employ as many undercuts for retaining the denture and leave as few to be blocked out as possible. It is not necessary always to accept the undercut areas in a mouth as they stand. The judicious use of diamond discs and stones can frequently reduce difficult undercuts.

Outline of Denture Drawn—All un-



19.
Those parts of the denture outside the dotted lines must be trimmed away before the denture will fit into position.

slides from the occlusal surfaces on to the polished surface of the denture and not down between the teeth and the denture under pressure on to the gingival margins. Such correct contact will only be obtained if the model is surveyed and the margin of the denture finished on or slightly above the survey line.



20A and 20B.

(Fig. 20A) Mesial undercuts 1 and 2 made parallel to the surveying pencil 4, by tilting the model. Distal undercut 3 accentuated and blocked out with plaster of paris. (Fig. 20B) Note how the denture inserted in the direction of the dotted lines fits into the undercuts 1 and 2 and will thus resist being withdrawn in the direction of the arrow A. Note also the tight contact of the artificial lower right first bi-

cuspid, with the natural lower right cuspid at the most bulbous points. This tight contact will prevent food packing down on to the gingival margin under pressure. Food will seep into the gap between the lower right cuspid and first bicuspid from the side, but will not be driven on to the gingival margin under pressure, and although it is likely to encourage caries, it will not strip the gingival attachment from the tooth. Patients fitted with any partial denture must be instructed in habits of meticulous cleanliness.

dercut areas revealed by surveying which will lie adjacent to the denture and which are not being employed for retention are blocked out with plaster of paris: the outline of the denture is then drawn.

Close Fit Ensured—Wherever the denture is in contact with a natural

tooth it must lie just on the occlusal side of the survey line. This will ensure that the finished denture fits the tooth closely and that no gap exists between the tooth and the denture for food to pack into. It has been stated that the denture should finish just on the survey line; the essence is that

it must not finish gingivally to the survey line or sufficiently far occlusally to produce any real tooth support for the denture.

(End of Part One)

Adapted from *British Dental Journal* 101:411 (December 18) 1956.

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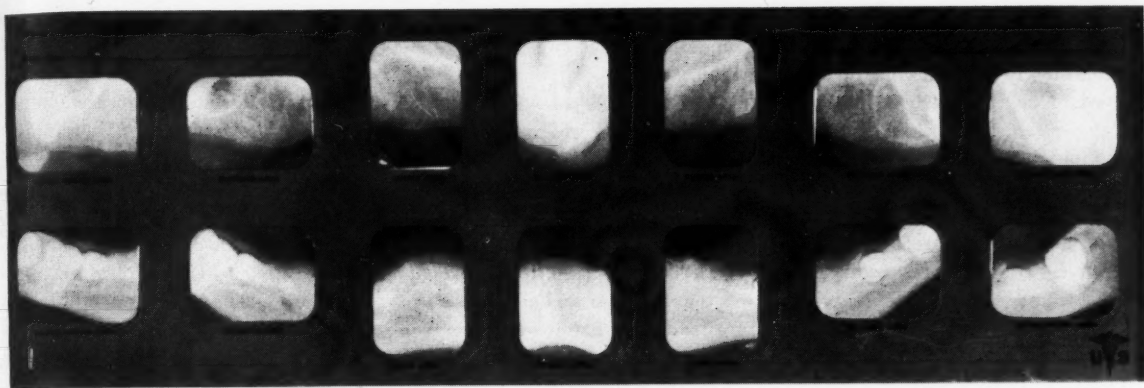
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1.
Intraoral roentgenograms showing embedded teeth.

The Need for X-Ray Study of the EDENTULOUS PATIENT

**RALPH W. FLINCHBAUGH, Lt. Col.,
(DC), USA, Fort Eustis, Virginia**

DIGEST

The need for roentgenograms for adequate diagnosis and prognosis in complete denture service is widely recognized. In 1946 Smith reported the roentgenographic findings in a series of 1000 edentulous patients.¹ This series amply demonstrated the value of x-ray in prosthodontic diagnosis: 22.4 per cent of the patients in this large series presented positive findings such as roots, root-tips, unerupted teeth, foreign materials, and cysts. The pressure of a heavy office schedule, however, makes it tempting to shorten this diagnostic procedure. With the patient in whom difficulties are expected, the operator is alert to take all steps which will ensure the success of treatment. It is in the case in which no difficulty is expected that the problem may occur. This case history demonstrates the possible conditions that may exist under the surface of edentulous ridges.

¹Smith, Earl S.: Findings in the Roentgenograms of Edentulous Patients, JADA 33:584-587 (May) 1946.

Case History

A 22-year-old man reported to the clinic with a complaint of "loose dentures." Questioning disclosed that acute caries had resulted in full mouth



2.
Anteroposterior view of skull showing embedded teeth.

extractions at the age of nineteen. Complete dentures had been constructed for him two months later. These proved to be completely satisfactory but in the past six months they had become loose. He was beginning to experience difficulty while eating.

Clinical Report—The patient appeared alert, well-nourished, and cooperative. His dentures were well designed and constructed. They had become unserviceable due to bone resorption.

Conditions Favorable for Dentures—Examination of the intraoral structures revealed unusually favorable conditions in all aspects for conventional complete denture prosthesis:

1. The alveolar ridges were full and rounded.
2. The interridge distance was sufficient, the arch form was ideal, and the maxillomandibular propor-

- tions were good.
3. The denture foundation tissue was in excellent health.

Abnormality Noted—The only clinically observable abnormality was a small white keratotic area in the lower left premolar region. The area was about 1 millimeter in diameter. Since the patient had been wearing unserviceable dentures, the first impression was that the area was a common denture "sore spot." However, roentgenograms had not yet been taken.

Routine Procedure—Patients with undiagnosed white lesions of this type are routinely referred to the Oral Surgical Section for possible removal and biopsy of the lesion. In this case as a matter of convenience routine roentgenograms were ordered before referring the patient. Conditions were so favorable for the construction of a

prosthesis that this measure seemed almost a waste of time.

Embedded Teeth Disclosed—When seven embedded teeth appeared on the intraoral pictures (Fig. 1) additional roentgenograms were made (Fig. 2).

Conclusion

In view of the cyst formation definitive treatment of the embedded teeth must precede prosthetic rehabilitation. But the report of this case should serve to corroborate expressed necessity to x-ray the ridges of the edentulous patient.

Fort Eustis, Virginia

Author's Note: This material has been reviewed by the Office of the Surgeon General, Department of the Army and there is no objection to its presentation and/or publication.

Use of Meprobamate Before Operative Procedures:

A Preliminary Report

WILLIAM LEFKOWITZ, D.D.S.

Discussion

The more anxious patients in this experiment were significantly benefitted by meprobamate medication as evidenced by examining changes in their emotional responses. Both excitable and apprehensive groups were more receptive to treatment. It is also evident that the more the patients need tranquilization for dental care, the higher the percentage of success may be anticipated. In discussing the differential diagnosis of dental pain, it has been stated that in a particular real life condition, the total pain experience of an individual is noticeably influenced by his emotional state.

Psychic Factors—The implication here is that whatever the source of pain it still may be intensified by psychic factors. Fear and anxiety in the patient have the effect of increasing his dental pain. Thus, meprobamate

appears to be a desirable choice when dealing with the dental patient where tranquility and safe sedation is indicated.

Aid in Reduction of Apprehension—With meprobamate, the dental practitioner possesses an agent with many potentialities for aiding in making the patient more amenable and less apprehensive to the general operative forms of dental treatment.

No Reversals Occurred—Normal patients did not become more apprehensive and apprehensive patients did not become more excitable than they were prior to receiving medication. All patients who received medication were either benefitted or remained in the same category.

Side Effects Unimportant—With the exception of drowsiness, the side effects were of no consequence. It was

previously reported that some patients do complain of drowsiness when first put on the drug, but this often passes away in a week or so if the medication is continued.

Conclusion and Summary

In this preliminary report on the use of meprobamate for the premedication of patients about to be subjected to dental operative procedures, the majority of apprehensive and excitable patients were observed to accept dental care with more composure after receiving meprobamate. In view of the encouraging results obtained from this preliminary study, further evaluation of this therapeutic regimen seems desirable.

Adapted from *Journal of Ohio State Dental Association* 32:29 (Winter) 1958.

The GLYCOGEN THEORY of CARIES—

a Method of Caries Prevention

E. EGYEDI, M.D., D.S., Amsterdam, Holland

DIGEST

The author of this article presents a theory concerning the development of dental caries, based on the heretofore unknown existence of glycogen in the dental enamel. The theory in brief is that caries is not caused by a lack of an element in the diet but by overconsumption, in particular by an excessive intake of carbohydrates during the formative period of the teeth. The author believes that by proper reduction in diet the same reduction of caries in children can be obtained as with fluoridation or the topical application of fluoride.

New Theory of Caries Developed

Epidemiologic findings and considerations of a nutritional-physiologic nature led the author to formulate a theory^{1,2} of caries which had not yet been proposed. Shortly after this theory had been formulated, it became possible to furnish evidence showing that the organic matter of tooth enamel in Holland contains over 10 per cent of carbohydrates in the form of glycogen.

Discussion of Theory—Susceptibility to dental caries arises during the development of the tooth. Too much food (especially carbohydrates) will result in the appearance of an excess of glycogen in most organs of the body, including the teeth. During the maturation of the matrix of the completed teeth this substance is immobilized in the apatite of the enamel. Accordingly the teeth, which contain an excess of glycogen, constitute an

area of lowered resistance for the attacking forces in the mouth after the eruption of the teeth.

Glycogen Converted into Glucose—Glycogen, as such, does not provide a suitable nutrient medium for the oral bacteria occurring in the plaque. When slightly acidified, however, this substance is ultimately converted into glucose. Glucose constitutes a medium essential to the cultivation of the majority of cariogenic bacteria.

Disease of Supernutrition—Dental caries is not a deficiency disease, therefore, but a disease of supernutrition, closely related to obesity, a condition of similar origin. When less food is ingested (primitive races, animals), little if any glycogen is retained in the developing teeth.

Cause of Caries—Initially caries is due to the fact that the bacteria present in the plaque grow into the organic portion of the enamel, provided it contains a sufficient quantity of glucose resulting from the splitting of glycogen. At this point, that is, where glycogen is converted into glu-

cose, the acid factor of Miller's theory plays an important part.

Organic Matter of Enamel Contains Carbohydrates—Stack^{3,4}, in his meticulous studies on the chemical constituents of the organic matter of enamel encountered an unexpectedly large proportion of carbohydrates.

Similar Carbohydrate Facts Presented—The methods adopted in the investigations carried out in the Amsterdam and Bristol laboratories eventually resulted in qualitatively and quantitatively similar carbohydrate findings.^{5,6} It is beyond the scope of this paper to present all the evidence confirming the glycogen theory.^{7,8}

¹Egyedi, H.: The Cause of Dental Caries, D. Items Interest **75**:113 (Feb.) 1953.

²Egyedi, H.: Enamel and Cementum Caries, New York D. J. **21**:119 (March) 1955.

³Stack, M. V.: Organic Constituents of Enamel, JADA **48**:297 (March) 1954.

⁴Stack, M. V.: The Chemical Nature of the Organic Matrix of Bone, Dentin, and Enamel, Ann. N.Y. Acad. Sci. **60**:585 (April) 1953.

⁵Stack, M. V.; v. Daatselaar, J. J.; De Vries, L. A.; and Egyedi, H.: A Study of Carbohydrate Levels in British and Dutch Enamel Samples, Tijdschrift v. Tandheelk. **63**:833 (Dec.) 1956.

⁶Egyedi, H., and Stack, M. V.: The Carbohydrate Content of Enamel. Resumé of Findings, New York D. J. **22**:10 (Oct.) 1956.

⁷Egyedi, H.: Glycogen and Schmelzkaries, Deutsche Zahnärztliche Zeitschrift **13**:481 (May) 1958.

⁸Egyedi, H.: Gibt es einen Fortschritt in unseren Auffassungen über Karies, Schweiz. Monatsscher. f. Zahnheilk. **68**:604 (July) 1958.

Sugar Consumption Per Person Per Day (1936-1938 — 81 grams) (Netherlands Central Bureau of Statistics)

1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
67	79	99	95	93	92	96	101	105	110

Chocolate foods (Netherlands Central Bureau of Statistics) (in kilograms per person)

1948	1949	1950	1951	1952	1953	1954	1955	1956
2.1	3.0	3.1	2.7	3.1	3.1	2.7	3.0	3.8

Sweets consumption (compiled from data published by the Central Bureau of Statistics)

1949 — 100

1949	1950	1951	1952	1953	1954	1955	1956
100	90	88	85	84	90	98	110

Reduction of Caries in Undernourished People

As the result of an opportunity offered by a state of war in which dietary restrictions were imposed on the people, data have been collected and classified in several countries; for example in Switzerland. In an impressive report of the data obtained in Norway and other countries Toverud⁹ challenged the carefully formulated conclusions reached by Sognnaes, namely, the view that reduction in caries is due to developmental factors. Toverud is inclined to believe that the theory of the effect of postruptive maturation affords a more satisfactory explanation of the facts.

Various Interpretations Proposed—

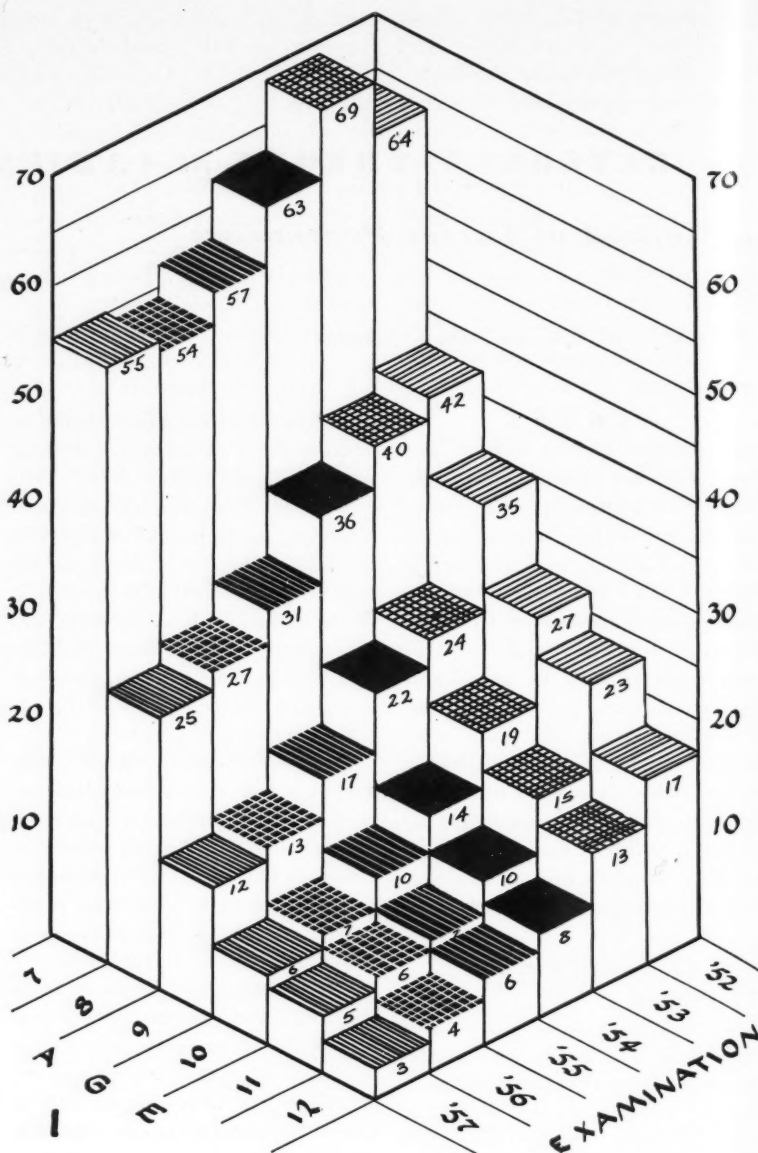
All figures as reported by Sognnaes and Toverud are mainly based on statistical data relating to the period from 1940 to about 1950. The sugar (and sweets) consumption curve during these years initially shows a sharp decline, followed by a steep rise.

Developmental Factors in Reduction of Caries—The Hague statistics¹⁰ were compiled by 18 dentists on 50,000 school children of the 1951-1957 period. Sugar and sweets consumption in the Netherlands continued at the same level during this period. Therefore, the reduction of caries is solely attributable to developmental factors.

Statistical Data on Subjects Immune From Caries

The statistical data (Table 1 and Fig. 1) on subjects immune from caries are concerned with those children in whom the effects of developmental factors are accurately reflected. In other words, these data present an accurate picture of the correlation between reduced glycogen formation and diminished enamel caries due to restriction of the diet.

Immunity Increased with Dietary Restriction—These statistics are confined to those children who are not affected by postdevelopmental acid



1.
Percent of caries-free teeth from 7 to 12 years of age.

production (little if any glycogen in relation to the acid activity being present in the enamel). Accordingly, the proportion of children relatively free from glycogen (that is, immune from caries) increased with the degree to which the diet was restricted and the period during which this restriction exerted an effect.

Conclusions from Statistics—The following conclusions may be drawn from the information in Table 1:

(a) The number of those immune

from caries in all age groups shows an increase in immunity in complete accordance with the decrease in dietary (and sugar) restrictions during the development of the teeth.

(b) The effect of the war years 1942-1944 on the statistics relating to those immune from caries was twice as marked as, for instance, that of the postwar years 1945-1947 during which restrictions on diet and sugar gradually decreased.

(c) The effect of the development-

⁹Toverud: The Influence of War and Postwar Condition on the Teeth of Norwegian Schoolchildren. The Milbank Memorial Fund Quarterly (October) 1956.

¹⁰Eibrink, Jansen, G. A. H.: Beschouwingen betr. het D.U.F. getal. Tijdschrift v. Tandkeek 65:276 (April) 1958.

at restriction of the diet is gradually declining. No further decrease is anticipated after 1962 at the latest. As might be expected, this developmental effect has already come to a standstill in the younger groups (6-, 7-, and 8-year-old children).

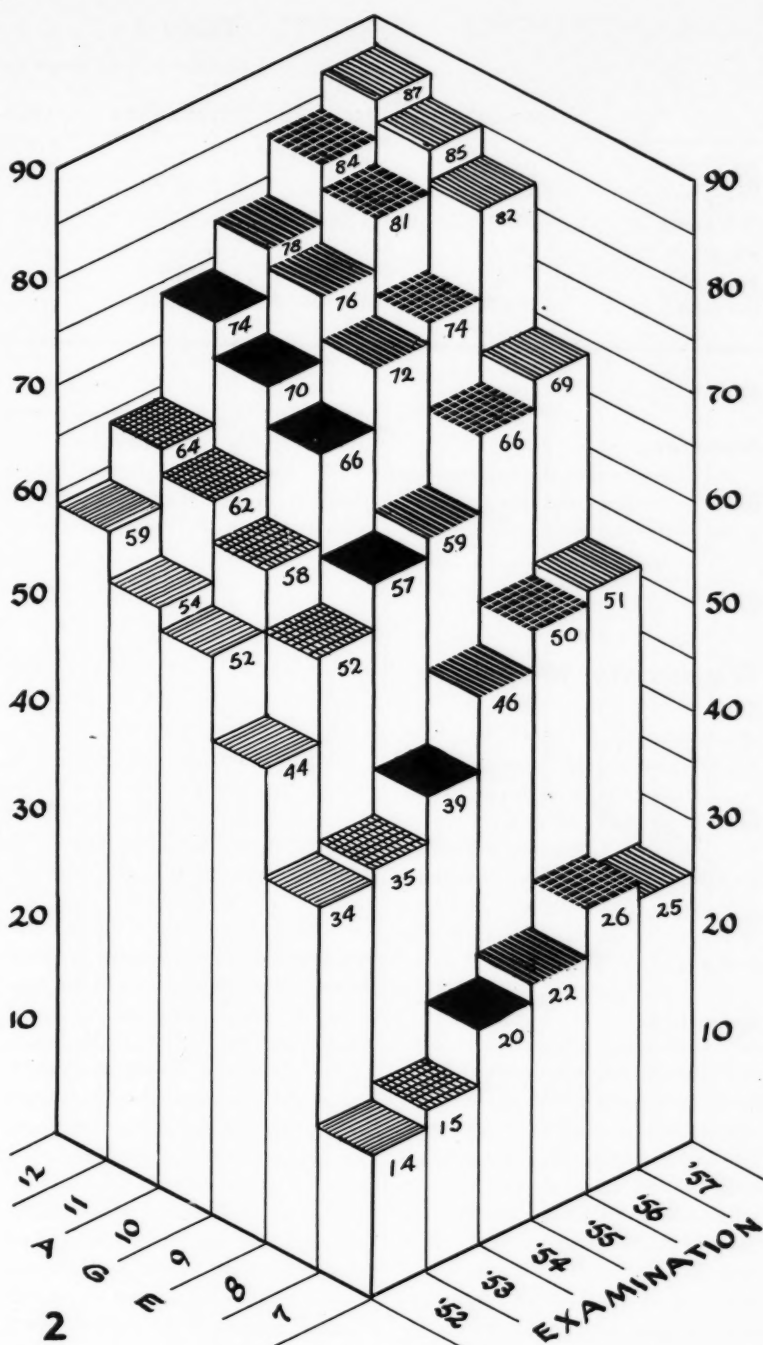
Developmental Prevention Of Caries by Diet Restriction

The following general conclusions may be drawn from the Hague statistics, the study of animal experiments, and the knowledge of glycogen metabolism: that a prolonged and moderate restriction of the diet during the developmental period can be expected to have an effect superior to that of brief and severe restriction of the diet. The accumulation of glycogen, that is, the DMF index, probably is dependent on the time factor rather than on the amount of carbohydrates.

Excess Food Should be Avoided—The important thing is not to starve for a longer or shorter period, but to avoid any excess in the diet, especially any excess of carbohydrates (sugar and starchy foods), for as long as possible during the 8-year period of dental development.

Eight-Year Restriction Advised—The ideal measure would seem to consist in restriction of the diet for 8 years in order to prevent any accumulation of glycogen, a measure comparable with the prevention of obesity in later years of life. It is difficult to achieve this ideal, but a more modest reduction of caries is a prospect readily capable of realization.

Maternal Education Advised—Experience of dietary restriction in a number of persons for the past 6 years has convinced the author that if 10 per cent of the cost of fluoridation were spent on education directed to mothers they might be persuaded effectively to restrict their own diet during the latter part of pregnancy and that of the infants during the first three years of life. The mothers strongly desire that their children should have better teeth than they have themselves and the period involved is confined to a few years.



2. DMF rate per 100 from 7 to 12 years of age.

Acquired Immunity is Permanent—It should be stressed that the task confronting those conducting the educational project in Norway was much more difficult than that confronting future propagandists of the developmental prevention of caries.

In the latter case it can be pointed out that when immunity has once been acquired, it will continue for life. Moreover, it has been demonstrated that half-truths in this field (sweets-carries) were unconvincing, in contrast with the whole truth (di-

Table I
Percentage of Children Free from Caries

	1951-1952	1952-1953	1953-1954	1954-1955	1955-1956	1956-1957
1st grade	63.1%	69.-%	61.9%	57.4%	53.4%	54.9%
2nd grade	42.7%	40.-%	36.5%	29.1%	26.6%	25.1%
3rd grade	34.1%	23.-%	20.8%	17.-%	13.-%	12.1%
4th grade	26.-%	18.-%	12.7%	10.-%	8.3%	6.8%
5th grade	22.4%	15.-%	10.2%	6.7%	5.2%	4.7%
6th grade	16.6%	12.-%	7.6%	5.8%	3.5%	2.9%

etary restriction—glycogen-caries).

Summary

(1) The glycogen theory, based on chemical findings and the results of animal experiments, is reviewed.

(2) The theory of postruptive maturation (refuge of the adherents of Miller's theory) is disputed.

(3) The statistical data on school children in the Hague are studied with a view to providing evidence of

the relationship between the accumulation of glycogen and caries.

(4) Caries-preventive measures based on the above are outlined.

Konigslaan 2

Hypnosis Machine

Question

It is said that a brain wave synchronizing machine, that will induce hypnosis, is available to the medical profession. Since the American Medical Association has accepted hypnosis, properly controlled, please comment on the use of this machine, especially in obstetrics.

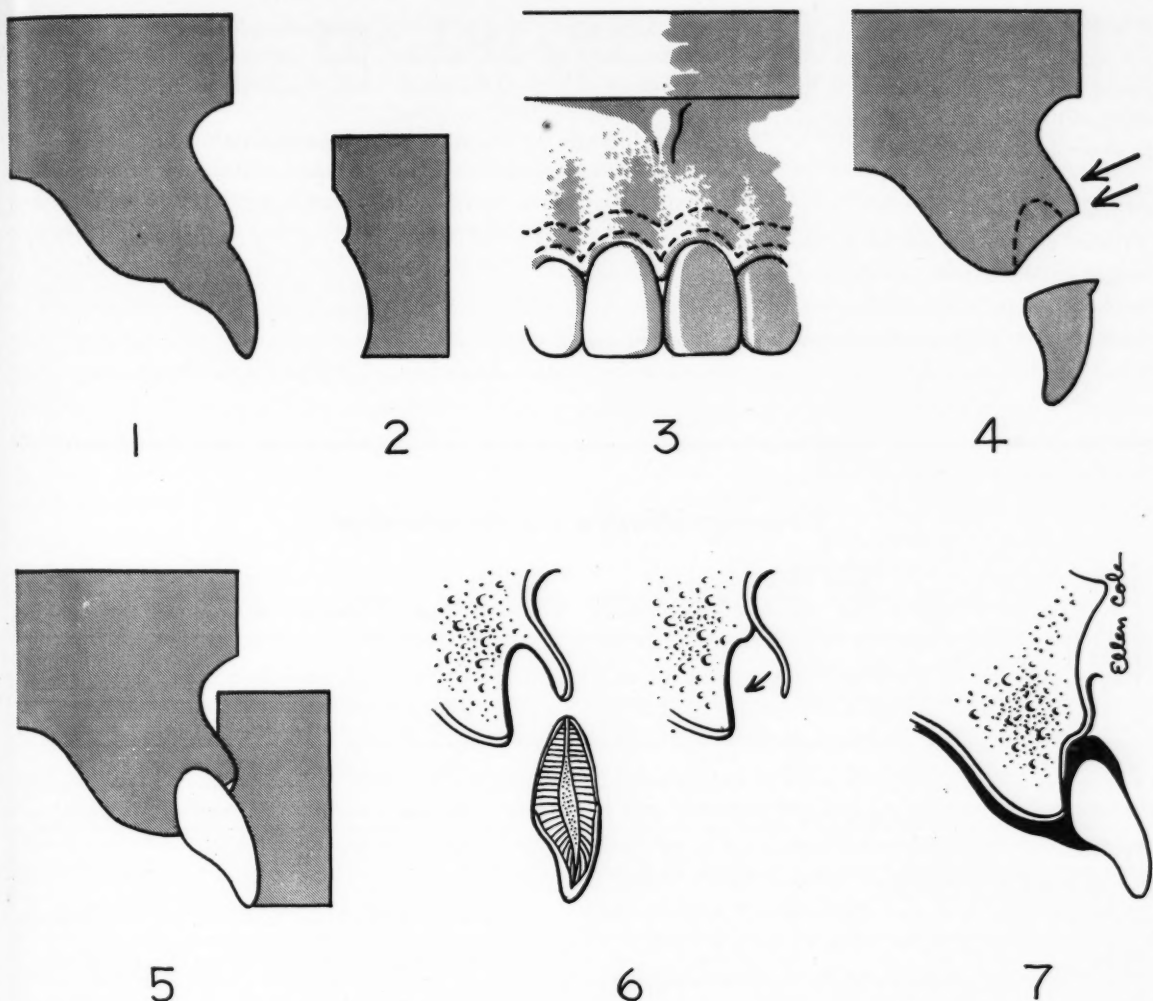
Comment

The brain wave synchronizer is an electronic instrument designed to induce various levels of hypnosis by subliminal and photic stimulation of the brain waves. The inventors, a clinician and an engineer, have developed a method for "driving" the alpha rhythm. The instrument can be used alone or combined with a tape recording of the therapist's induction and dehypnotization techniques. Directions for use are easily followed.

Patient Receptivity Increased—The instrument definitely increases receptivity to suggestion and has been clinically tested on more than 2,500 subjects, including over 200 obstetric patients attending group hypnosis, prenatal training classes. The apparatus induced light to deep hypnotic levels in over 90 per cent of the subjects. Hypnotic response is more readily produced if a favorable "mental set" is created. Therefore, to some extent the expectant attitude created by the structured situation enhances the hypnotic response, but about 30 per cent of the subjects who had received no explanation of verbalization and who had no knowledge of what the brain wave synchronizer would do were hypnotized to various degrees ranging from light to deep states.

Additional Advantages—The apparatus has remarkable potentialities for deepening a previously fixed hypnotic level and for facilitating and speeding up hypnotic induction, which often can be time-consuming, especially in refractory subjects. It also can help make labor and delivery a more gratifying experience by reducing discomfort and the need for excessive analgesia and anesthesia. Thus, the brain wave synchronizer has wide application to clinical and experimental hypnosis research. A distinct advantage is that no physical connections or attachments are placed on the patient. The unit weighs only 7 pounds.

Adapted from Questions and Answers, *Journal of the American Medical Association* 169:1402 (March 21) 1959.



IMMEDIATE DENTURE *Construction*

Without Sutures

CHARLES A. PRIEST, D.D.S., Marion, Indiana

DIGEST

This article is a pictorial presentation of the steps involved in a successful immediate denture construction technique in which sutures are not used.

Figure One

This model shows the anterior teeth in position. The posterior ridges have healed.

Figure Two

This model is used as a guide to

set the anterior teeth in proper position on the alveolar ridge.

Figure Three

Before the anterior plaster teeth are removed from the first model, mark the position of the gingival attachment. Make another mark on the model about $1\frac{1}{2}$ millimeters above the first mark.

Figure Four

Cut the plaster teeth from the model and make tooth sockets to the depth of the last mark on this model, as shown in Figure 3.

Figure Five

Grind porcelain teeth to fit the sockets and place them in position on the model using model number 2 to obtain correct position and relationship.

Figure Six

After extracting the teeth smooth the rough edges of bone so the gingival tissue will lie smoothly over the bone. Never disturb the lingual portion of bone. The gingival tissue in the interproximal space is trimmed so that the labial and lingual portions just meet when they approximate each other.

Figure Seven

The section of denture shows how

neatly the gingival tissue is held in place without sutures. The patient will experience no irritation or pain.

Conclusion

Before placing the denture in the patient's mouth, introduce into each tooth socket a small piece of soluble Penicillin G potassium tablet, 50,000 units, and cover with a small piece of Gelfoam®.

424 West Nelson Street

Tranquilizers in Dentistry

	Skeletal Muscle Relaxa- tion	Anti- Hista- minic Property	Potentiation of Other Depressants	Anti- Emesis	Hypo- tensive Property	Onset	Oral Duration	Adult Dosage Outpatient	Other Effects*
PHENOTHIAZINES									
Thorazine	-	+	++	++	++	30 min.	2-4 hrs.	10-25 mg.	Jaundice†
Sparine	-	+	++	++	++	30 min.	2-4 hrs.	10-25 mg.	
Stelazine	-	±	+	+++	+	30 min.	2-4 hrs.	†	
Compazine	-	+	+	++	+	30 min.	2-4 hrs.	5-10 mg.	
Trilafon	-	+	+	++	+	30 min.	2-4 hrs.	4-8 mg.	
RAUWOLFIA ALKALOIDS									
Reserpine	-	-	++	-	+++	30-60 min.§	3-4 hrs.	0.5-2 mg.	Nasal Stuffiness
Moderil	-	-	+	-	++	30-60 min.	3-4 hrs.	0.25-5 mg.	Nasal Stuffiness
Harmonyl	-	-	+	-	++	30-60 min.	3-4 hrs.	0.1-1 mg.	Nasal Stuffiness
CARBAMATES									
Miltown or Equanil	++	-	+	-	-	30-60 min.	3-4 hrs.	400 mg.	
Sedamyl	-	-	-	-	-	30-60 min.	3-4 hrs.	260 mg.	
Nostyn	-	-	-	-	-	30-60 min.	3-4 hrs.	300 mg.	
DIPHENYLALKANES									
Atarax	-	++	-	-	-	15-30 min.	2-4 hrs.	25 mg.	
Suavitol	-	-	-	-	-	30-60 min.	3-4 hrs.	2-4 mg.	Dryness of Mouth and Dizziness
PHENYLALKANES									
Ultran	++	-	-	-	-	30-60 min.	2-4 hrs.	300 mg.	

By Francis W. Hughes, Ph.D., *Journal of the Indiana Dental Association* 38:93 (March) 1959.

*Drowsiness is a potential property of all tranquilizers but usually can be avoided by dosage adjustment.

†Intended only for hospitalized or closely supervised patient.

‡Reported only with high dosage long-termed therapy.

§Peak effect may not be reached until administered several days to several weeks.

The EDITOR'S Page

DENTISTS, as well as physicians, should be alerted to an unusual and grave complication that may follow tooth removal: pulmonary infarction from a septic embolus that originates in a thrombotic process in the veins of the neck.

The mechanism as described by Adams and Hudgins¹ follows this general sequence: An infected tooth (either periapical or periodontal infection) is removed. The focus of infection that is disturbed by the trauma of extraction travels through the venous drainage system of the mouth to set up a cervical phlebothrombosis. The infectious process in the wall of the neck veins remains localized for a time (5 to 7 days in the cases reported) then an embolus is freed that travels in the circulation to lodge in the lung to create a pulmonary infarction. The pulmonary episode is introduced by a sudden rise in temperature, by chills, severe chest pain, and a cough.

Because there is a time lag between the extraction and the overwhelming pulmonary reaction the causal relationship may not be evaluated correctly. These cases may be misinterpreted as "virus pneumonia" or if pulmonary infarction is suspected the primary focus may not be recognized.

In general, the physician associates pulmonary infarction with emboli that have originated from the veins of the leg. Blood stasis after surgery, for example, favors the development of phlebothrombosis in the veins of the lower extremities. A clot breaks free to enter the general venous circulation and is carried to the lung with subsequent infarction and possible death.

Adams and Hudgins present two instances of pulmonary infarction after dental extraction. Both were males, ages 40 and 38 years.

In the first case the pulmonary symptoms commenced seven days after the extraction, with a sudden rise of temperature to 40 C suggesting the development of pulmonary infarction. In the second case the pulmonary symptoms commenced five days after the extraction, and the subsequent course was marked by two episodes of severe chest pain indicating the development of pulmonary infarcts. Although the connection of the pulmonary symptoms

with the dental procedures was not obvious at first, it became clear later that both patients had cervical phlebothrombosis which led to the pulmonary complications. It is concluded that in all cases of unexplained pulmonary infarction the patient's dental history should be considered.

"The superior venous circulation is rarely considered a source of pulmonary infarction. Since there is often a delay of one or two weeks before the symptoms of embolization appear, it is not surprising that this disease of the lung is not associated with the earlier oral trauma. This suggests an important unrecognized cause of pulmonary disease.

"The tendency of physicians to dismiss episodes of chest pain, fever, and cough as a 'virus pneumonia' may allow this disease to go unrecognized. The ineffectiveness of antibiotics will only serve to confirm the erroneous diagnosis. An accurate diagnosis, based on recognition of the antecedent oral trauma, or a careful search for signs of cervical venous disease may be expected to reveal the correct etiology. This is more than an academic exercise, because proper treatment should include the early use of the anticoagulants.

"Careful inspection of the neck region for swelling, tenderness, or other evidence of venous infection or obstruction should be undertaken, in addition to routine examination of the lower extremities, with all episodes of unexplained pulmonary infarction.

"Two instances of pulmonary infarction occurred after dental extraction and phlebothrombosis of the cervical veins. Both patients recovered. The superior as well as the inferior venous circulation should be carefully evaluated as a source of unexplained pulmonary infarction, and the distinction between pulmonary embolism arising from phlebothrombosis and 'virus pneumonia' after dental extraction should be emphasized because of the importance of early recognition and treatment."

This serious syndrome of pulmonary infarction that is associated with dental disease and dental procedures is another example of the necessity for wider biologic awareness on the part of both the dentist and the physician; and of the need for a closer and more integrated cooperation between the two professions.

¹Adams, Crawford W., and Hudgins, James H.: Pulmonary Infarction After Dental Extraction, JAMA 170:412 (May 23) 1959.

1



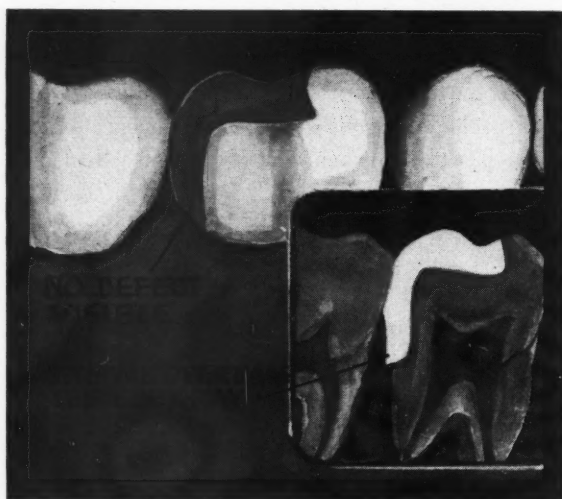
Clinical and Laboratory

Condensing Porcelain

Edward Ha, Jr., D.D.S., Los Angeles

1. An electric gold foil condenser is set at high frequency, low intensity and used for porcelain condensing. A 3/16-inch cylindrical mounted stone is inserted part way into a piece of 1-inch latex tubing. The die is inserted into the opposite end of the tubing. When vibration is desired the shaft of the mounted stone is depressed into the foil condenser handpiece.

2

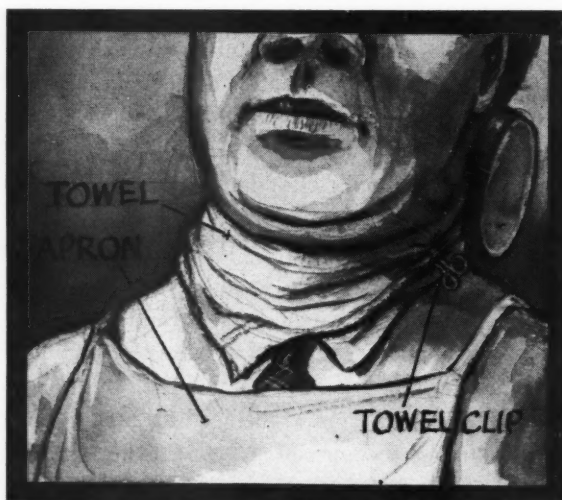


Seating of Class II Inlays

Richard T. Matousek, D.D.S., Apple Creek, Ohio

2. Before cementing a Class II inlay make an x-ray exposure to determine if there is a proper gingival fit.

3



Protection of the Patient's Clothing

David Waldman, D.D.S., Flushing, L. I., New York

3. With the large amounts of water that are needed to cool cutting instruments while operating under high speed it is necessary to protect the patient's clothing. Clip a linen towel around the patient's neck to form a collar for protection.

READERS Are Urged to Collect \$10.00

For every practical clinical or laboratory suggestion that is usable, DENTAL DIGEST will pay \$10 on publication.

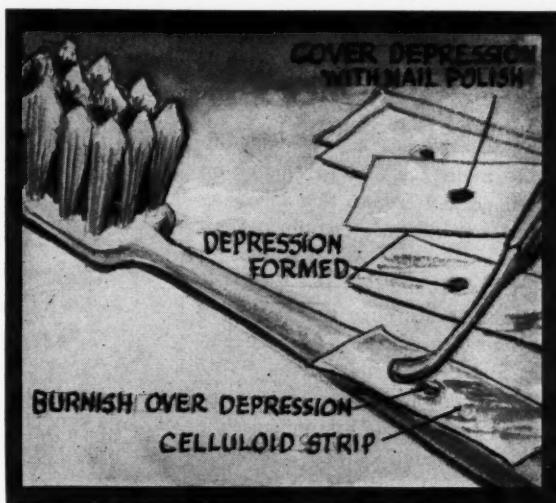
You do not have to write an article. Furnish us with rough drawings or sketches, from which we will make suitable illustrations; write a brief description of the

SUGGESTIONS . . .

Contouring Silicate Restorations

R. W. Pedersen, D.D.S., Boyd, Minnesota

4. Use a Number 8 round bur to make a shallow, oblong depression in a toothbrush handle. Use a warm ball burnisher to burnish a celluloid or steel strip into this depression. Dot the contoured area with colored nail polish. Insert the strip between the teeth and move it to a position where the colored dot is in proper contact with the proximating tooth.

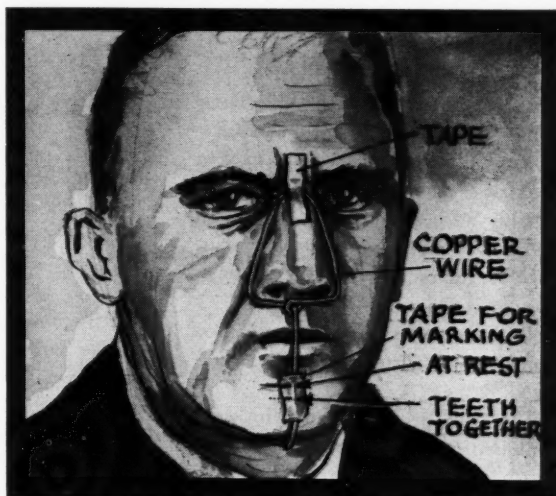


4

Determining Freeway Space

Herbert K. Graham, Jr., D.D.S., Sacramento, California

5. Adapt a piece of Number 12 copper wire and tape to the face as shown in the drawing. Mark the chin and the tape with the teeth in occlusion. Have patient swallow and allow the mandible to assume the rest position. Mark the tape at this position. The difference between the marks represents the freeway space.

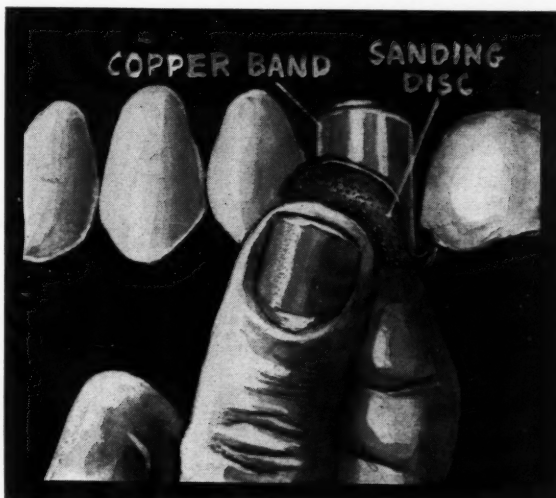


5

Removal of Copper Band Impression

C. B. Beamish, D.D.S., Port Hope, Ontario, Canada

6. The use of a large sandpaper disc folded over the copper band will facilitate easy removal of the band by furnishing a firm grip with the pressure evenly distributed around the band.



6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 322 for a convenient form to use.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.



Drug Therapy and Psychiatry

Drug therapy has advanced significantly in the field of psychiatry on two important fronts: that involving drugs that influence emotions, anxieties, and tension and the second, which is assuming an increased importance, concerning the riddle of the dynamics and power of the placebo and the placebo reaction.

The drugs are divided into three general groups: The first includes the traditional sedatives and hypnotics. These are (a) barbiturates, (b) the bromides, (c) paraldehyde, (d) chloral hydrate. In small doses they relieve tension. Also they are effective in assisting the patient to relax and sleep.

The second includes the tranquilizers—also termed ataraxics. These drugs have specific pharmacologic actions on the central nervous system in areas that have not heretofore been reliably affected by drug therapy. In addition, their action seems to influence tension, anxiety, and emotions in many instances without distortions of consciousness. This means that some patients can be chemically relaxed.

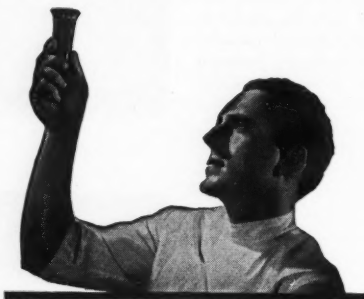
The third group of drugs involves combinations of two ataraxics or an ataraxic drug and one of the traditional sedatives or hypnotics. Quite a number of these combinations have appeared.

The use of the various ataraxics is empirical and subjective. It is imperative that the dosage be regulated at an individual level. The aim is to produce a significant reduction of anxiety and tension rather than abolition of them.

It has been informally estimated that the placebo factor is responsible for about 40 per cent of the result in any given drug therapy. There has been little organized scientific information to direct its indications or contraindications and the dynamics of its actions. The placebo can influence the physiology and psychology of a patient both subjectively and objectively. The placebo reaction may

MEDICINE

and the Biologic Sciences



follow and be an adjunctive reaction to the giving of the potent pill. It can also follow an injection, a ritual, a "laying on" of hands, a surgical operation, or psychotherapy itself.

The placebo reaction is a basic and primitive emotional response based on the normal desire to be free from pain and suffering and to return to the healthy state. This reaction is possible in every human being regardless of his emotional adjustment. The placebo should not be relied upon to solve the problems of patients.

Fischer, H. Keith: Psychiatric Progress and Problems of Drug Therapies, Gen. Pract. 16:92-96 (September) 1957.



Temporomandibular Joint Syndrome

Spasm of the masticatory muscles frequently causes facial pain. The spasm may be accompanied by dysfunction of the mandibular muscles. The pain is usually eliminated by conservative treatment. The following measures, however, are rarely successful: cortisone therapy, joint in-

filtration with sclerosing solution, excision of the meniscus, or altering of the teeth.

The temporomandibular joints are the only system of yoked joints in the body. Neither joint can function independently of the other. The mandible has a wide range of motion since the joints turn in virtually all directions.

The temporomandibular joints are resistant to diseases. With rheumatoid arthritis, the incidence of temporomandibular joint involvement is less than 5 per cent, whereas finger joints are affected in 92 per cent of instances.

A sudden or continuous stretch of the masticating muscles as in a yawn often precipitates the temporomandibular joint syndrome. The most important etiologic factor is predisposition either psychologic or physiologic. Emotional tension may be manifested by clenching or gnashing the teeth. Dental malocclusion is probably only a contributing factor.

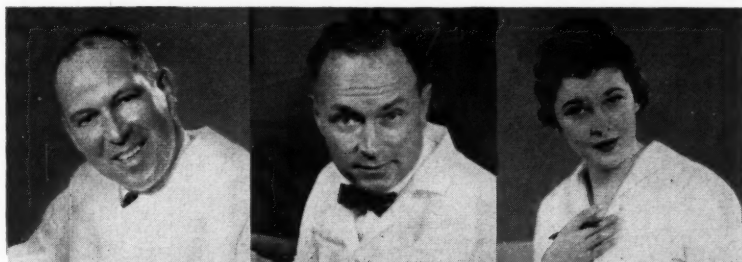
The pain of the syndrome is a unilateral, constant, dull earache or jawache sometimes spreading to the head, neck, and shoulder. Dysfunction generally consists of limitation of mandibular movement. Functional incoordination of mandibular muscles may occur. Symptoms of incoordination, including clicking and recurrent subluxation, are less incapacitating than limitation of motion.

Initial treatment consists of use of ethyl chloride spray or procaine infiltration of muscles to relieve pain. When painless movement is possible, the patient exercises the mandible while lying on his back. Exercises are selected according to the type of dysfunction. For dysfunction from limitation, the patient moves the mandible in gentle rhythmic movements, gradually increasing the range. Recovery is less rapid if symptoms are of long duration. In such instances exercises are devised to stretch the masticatory muscles.

Altering occlusion of the teeth is a valuable adjunct in treatment of temporomandibular joint syndromes. However, dental therapy cannot be
(Continued on page 322)

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CLINICAL AND LABORATORY SUGGESTIONS

(See pages 318 and 319)

Form to be Used by Contributors

To: Clinical and Laboratory Suggestions Editor

DENTAL DIGEST
708 Church Street
Evanston, Illinois

From: _____

Subject _____

Explanation of Procedure:

Sketch:

Suggestions submitted cannot be acknowledged or returned.
\$10 will be paid on publication for each suggestion that is used.

relied upon completely and should be delayed until improvement is evident.

Schwartz, L. Laszlow: *A Temporomandibular Joint Pain-Dysfunction Syndrome*, *J. Chron. Dis.* 3:284-293 (September) 1956.



Hip Surgery

Only when severe pain is not eliminated by short periods of rest or when joint deformity is impending should operation be performed for patients with hip lesions. Usually weight reduction, physiotherapy, and restriction of strenuous activity are adequate when the disability is slight.

Mold arthroplasty is recommended when adequate femoral neck and head remain after the head is remodeled and the bony structure is adequate for development of a satisfactory acetabulum. Restoration of muscle function is seldom possible if scarring about the joint from trauma or infection is extensive.

Patients with residual active infection or previous fractures of the acetabulum with intrapelvic protrusion and scarring are not suitable for mold arthroplasty. Also the operation should not be done for patients who are unable to cooperate in the rehabilitation program.

If aseptic necrosis or degenerative cystic changes have destroyed much of the femoral head a prosthesis should be used. Also a replacement operation is advisable if shortening of the neck of the femur is of long duration.

A plastic device may become worn, broken, or cracked with use. Metallic prostheses, are therefore, superior to plastic replacements. A replacement operation should not be the initial treatment for fracture of the femoral neck unless the patient is elderly and cannot withstand prolonged disability or some other factor precludes healing by internal fixation and satisfactory rehabilitation. If results of a mold arthroplasty are not satisfac-

tory, a revision procedure may be done. When the acetabulum is inadequate, deepening of the socket and replacement of the mold may allow good function. A prosthesis is inserted if the femoral head is absorbed beneath the mold. When a stem prosthesis fails, intramedullary fixation is usually done.

Recurrent infection or chronic drainage after arthroplasty necessitates removal of the prosthesis or mold and all other foreign matter and debris. The end of the femoral shaft is placed in the acetabulum, the leg is abducted and muscles in good condition are reattached to the femur at the lower level. In some cases the final step is fixation by fusion of joint surfaces. The procedure should not be attempted for elderly patients, however, because fusion is difficult to attain and prolonged bed rest is necessary.

Ghormley, Ralph K.: *The Present Status of Surgery of the Hip*, Rocky Mountain M. J. 54:337-344 (March) 1957.



Burn Wounds

There are three general considerations to keep in mind when dealing with wounds caused by burns:

(1) The relation of depth of burn to survival. A partial burn which does not require skin grafting has about one-half the killing power of a full-thickness burn of equal area. Unless burns are extremely deep they cannot be classified on clinical grounds with authority at the time of injury.

(2) The influence of age upon survival. At age 30, the tolerance begins to fall, at first slowly, then sharply.

(3) In the past fifteen years, there has been no decline in the mortality from full-thickness burns of over 35 per cent. Although many patients live longer, the ultimate survival rate is unchanged. Some patients with 90 per cent burns have been kept alive for three somewhat meaningless weeks. When burned patients are toxic, the probable cause is a state of systemic bacterial invasion.

The skin is a good insulator and

heat is not readily transmitted through it. Perhaps death of the deep portion of the skin may occur as a complication of the burn rather than only because it is irreversibly cooked. It is possible that if vascular stasis and thrombosis, lymphatic blockade, and increased capillary permeability were less severe, tissue death would also be less extensive. Immediate immersion of burns in cold water relieves pain. A reduction in tissue death is probably also brought about. The appli-

cation of cold water immediately after the burn will diminish edema and altered capillary permeability.

The control of infection is an unsolved problem. Not only do many patients die because of invasive infection and septicemia, but local infection also has devastating consequences. The control of infection in the presence of dead tissue and in the absence of circulation is an old riddle.

(Continued on page 324)

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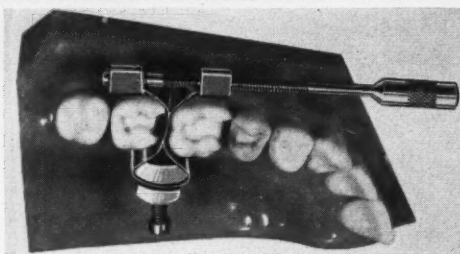


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Antibiotics, antibodies, and leukocytes cannot arrive into the dead tissue: physical controllable factors, therefore, play an important role. In dying arteriosclerotic extremities, dry gangrene is generally free of infection, while wet gangrene tends to be come infected. Dryness, coolness, and light successfully provide a prophylaxis against infection where antibiotics fail. The open or exposure treatment of burns endeavors to produce a dry gangrene of the burned tissues. It is difficult to prevent cracking of the eschar about burned joints. If infection develops and dissects beneath the eschar, the eschar is transformed from a protective armor to an undrained pus bag.

Full thickness burns are healed only after they are grafted. They can be grafted only after they have been debrided. Twelve days after the burn, there is a sharp line of demarcation between the dry leathery eschar and the living tissue beneath. Precise scalpel dissection in the plane immediately beneath the eschar is satisfactory, although tedious.

Improved results in burn care involve: (1) mitigating the destructiveness of burn injuries—perhaps by heparin, cold application, or perenteral trypsin; (2) in controlling infection more successfully—perhaps by closed techniques that also dry the

slough, perhaps by supporting the patient's resistance to invasive infection by the administration of non-specific bacterial antibody; and (3) in influencing the immune reaction that brings about the rejection of homografts so that they may persist longer or indefinitely.

Gimbel, N.S.: *New and Old Methods of Managing Burn Wounds*, J. Mich. Med. Soc. 55:949-951 (August) 1956.



Endocrine Disturbances

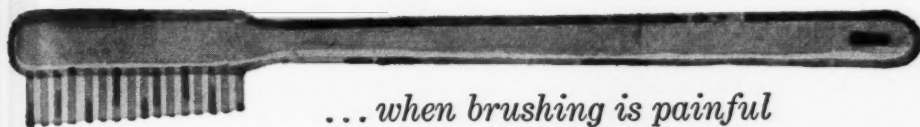
Dysfunction of the endocrine organs is accompanied by many and varied skin changes. Frequently the skin involvement seems to be the major symptom of the dysfunction. In other endocrine diseases, the skin changes are secondary to more serious systemic symptoms. These are important, however, because they often offer the first clue to the underlying condition. For example, diffuse increase in pigmentation may suggest Addison's disease. Also moniliasis of the intertriginous areas of the breast or other regions may suggest diabetes mellitus.

The principal diseases of the pituitary gland in which skin manifestations play a large role include acromegaly, Cushing's syndrome, Simmond's disease, Froehlich's syndrome, and adiposis dolorosa. An almost universal finding with Cushing's syndrome is broad, purplish striae atrophicae in the lower and lateral portions of the abdominal skin. Usually the skin is dry and scaly.

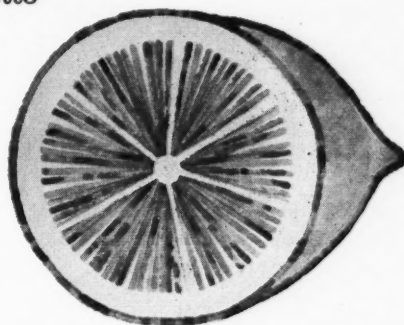
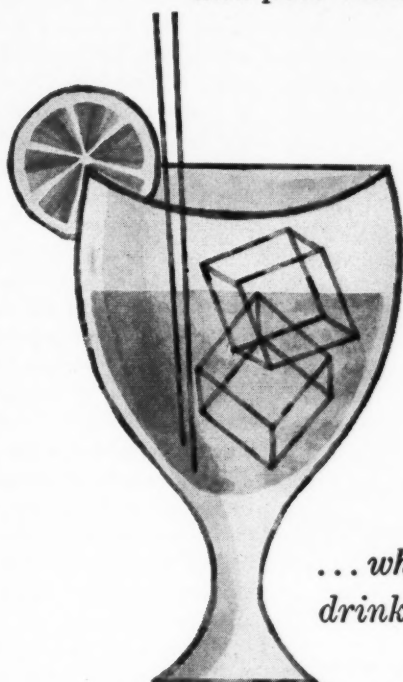
With hyperthyroidism, the skin is generally smooth, moist, and warm with a slightly rosy hue. Hyperhidrosis is common and the sebaceous glands are over-active with a tendency to seborrheic dermatitis, acne, and comedones. In many instances pigmentation is increased. In many patients localized circumscribed areas of boggy edema are noted in pretibial areas.

The skin is pale and cool to the

(Continued on page 326)

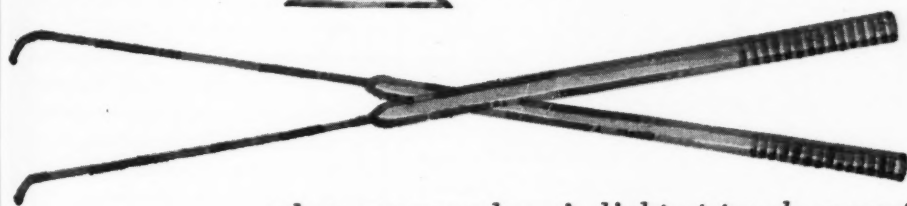


*... when brushing is painful
and poor mouth hygiene results*



*... when acid fruits
are not fully enjoyed*

*... when hot or cold food and
drink cannot be tolerated*



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patient on*

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The most recent report¹ on Thermodent, in which 74 patients were studied, states that 77% realized moderate to complete relief of hypersensitivity. In increasing numbers, patients who formerly could be treated only occasionally now enjoy *continuous* relief through

routine brushing with this "at-home" adjunct to office therapy. Not only can they tolerate hot and cold food and drink in comfort, but daily brushing without pain is once again possible. Regular use of Thermodent also helps to overcome the discomfort of dental instrumentation.

Promoted only to the dental profession, Thermodent is available in 2-oz. tubes at all pharmacies.

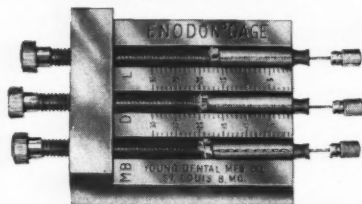
1. Abel, I.: Oral Surg. 11:491 (May) 1958.

Theo. Leeming & Co., Inc. 155 East 44th St., New York 17, N. Y.

touch in hypothyroidism. There is a generalized drying, particularly in the palms and axillae. In fully developed myxedema, pitting is lacking and firm edema of the skin is noted.

The cortex of the adrenal glands is intimately connected through its secretion with mineral, carbohydrate, and water metabolism. The cortex is also the source of some androgenic compounds that have a masculinizing effect on females. The outstanding dermatologic manifestation of Addison's disease is hyperpigmentation that is uneven in distribution and color. The normally pigmented areas are affected first, and any irritation of the skin increases the pigmentation. The area around the mouth remains relatively unpigmented; this may perhaps be a diagnostic sign. The lips and the oral mucosa also show increased pigmentation. Sweating may be increased. The skin is softer, but atrophy is lacking. The hair may become coarser and premature graying and even loss of hair are not uncommon.

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With diabetes mellitus, the skin sugar is extremely high—sometimes double the normal amount. In addition, the skin stores sugar for a long time, which explains the susceptibility of diabetic patients to infection. Such persons are prone to furunculosis, hydradenitis, urticaria, and especially, pruritis. Diabetes should always be considered, particularly in older patients, when pruritic lesions, especially those situated around the genitals, are resistant to treatment. Diabetic patients also have a tendency to the more severe forms of mycotic infections. The vascular disease observed in a high percentage of diabetic patients plus the poor resistance to infection may result in diabetic gangrene of the toes.

Peck, Samuel M., and Palitz, Laurence L.: *Common Skin Changes with Vitamin Deficiencies and Endocrine Disturbances*, *Mod. Med.* 25:191-199 (July 15) 1957.



Uterine Myomas

During the reproductive years uterine myomas are found with increasing frequency. These tumors are present in 30 to 40 per cent of women entering the later part of menstrual life. Most myomas are less than 6 centimeters in diameter and are asymptomatic.

The symptoms which necessitate surgery are bleeding, pelvic or abdominal discomfort and pain, large size, and rapid growth. Surgery is performed least often for sterility.

The most frequent symptom is bleeding. It is usually menorrhagic with gradual shortening of the intermenstrual periods. Distress in the pelvic and abdominal regions results from pressure on neighboring organs, usually the bladder or bowel. Sharp pain may be due to twisting or infarction.

Usually operation is not necessary for a myoma smaller than a three to four months' pregnancy. In any location, a known myoma suddenly growing in size must be considered

for surgical treatment. Radiation should not be used for uterine myomas in young women unless the patient is a poor surgical risk and treatment is necessary.

Hysterectomy is justified in a young woman of procreative powers only when pathologic aspects outweigh a reasonable chance or desire of reproduction. The indications for hysterectomy are irreparable bilateral adnexal disease, uterine or other carcinoma, disabling uterine prolapse or relaxation, extensive adenomyosis, and large numbers of fibroids. In a patient who is over 37 years old or who has completed her desired family, these indications are reinforced. Myomectomy (the removal of a portion of muscle or muscle tissue) is physiologically sound. The patient must be warned that the need for a more extensive procedure may be recognized at the operation and also that new myomas may develop in the future. The absence of pregnancy must be established before preliminary curettage.

The mortality after myomectomy is less than 1 per cent. The development of new myomas is rare. About 25 per cent of women whose sterility had no other evident cause than myomas conceive subsequent to myomectomy.

Welch, John S.: *The Surgical Treatment of Uterine Myomas in the Young Woman*, *Surg. Clin. North America* 37:1106 (July) 1957.

Radiation Hazards in Dentistry

P. D. De VILLIERS, M.B., Ch.B., F.F.R., D.M.R.D.

It is possible for the dentist to use freely of the great benefits of diagnostic radiology with a clear conscience and in safety, at the cost of a cone, a lead ring, and an aluminum disc; and for the small trouble of standing against the surgery wall every time he makes an exposure.

From *The Journal of the Dental Association of South Africa* 14:45 (Feb. 15) 1959.

Contra- Angles



Among the Masters

Everyone seems to admire courage in any form. There is the physical courage of heroes. There is the courage of faith from whence came the martyrs. There is the courage of the mind that has allowed men to face ridicule, opposition, and poverty to advance an idea or an ideal.

The easy course for any of us to follow is to ride with the crowd: be conventional. Do the accepted things. Express the current and passing ideas. Strive for popularity.

The hard course is to be brave enough to be different. Be individualistic. Express original ideas. Be indifferent to popularity.

Dental organizations, like most other groups of men, do not like the man who dares to be different. His unorthodoxy may take various forms. He may talk too much in open meeting. He may oppose projects that the majority favor. He may have original theories regarding dental disease and treatment. He is not considered quite "safe." He is often uncomplimented behind his back. Because his heart is stout, the attacks that are made against him are usually made in stealth and from the rear.

There are people who are born before their time. They have reached a stage of comprehension that is advanced in years beyond their fellows. They have an understanding or a knowledge that is ahead of schedule. Their lot may not be a social or a happy one.

I have recently been reading *AMID MASTERS OF TWENTIETH CENTURY MEDICINE* (Charles C Thomas) by a distinguished physician Leonard G. Rowntree. Out of his vast experience

at Johns Hopkins and the Mayo Clinic, Doctor Rowntree tells the stories of the men in medicine who had the courage to question the *status quo*, who had the audacity to explore new fields, who had the stamina to overcome opposition. The book is of brave men in struggle to extend the boundaries of the knowledge of disease.

There would be no progress unless someone had the courage to think original thoughts and do something about them. To have the thought is not enough. Anyone can dream. Many

of us enjoy fantasy and accept it as a substitute for reality. The people who expand knowledge and make social contributions add *doing to thinking*. Research means exactly that: doing something with *your* ideas. Exploring, testing, developing, questioning—free from shibboleths, traditions, preconceptions: these are of the substance of research.

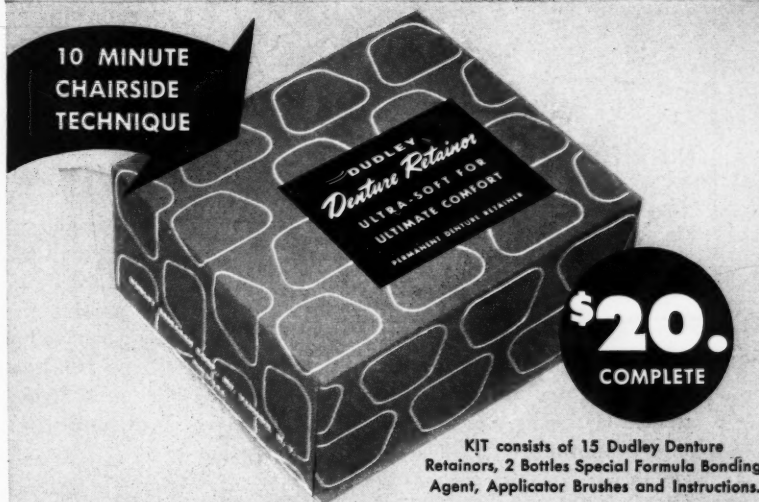
What Leonard Rowntree has done for medicine someone should do for dentistry. There have been some great men, real masters and original think-

(Continued on page 329)

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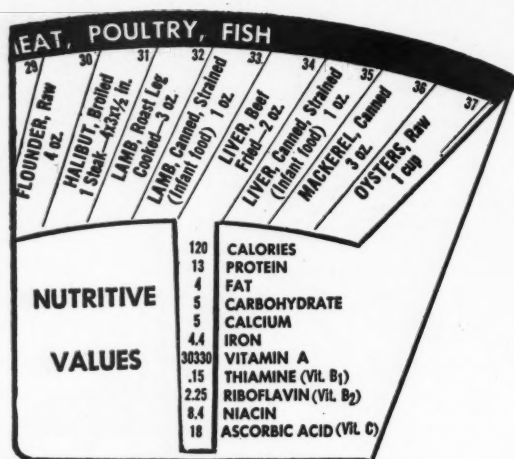
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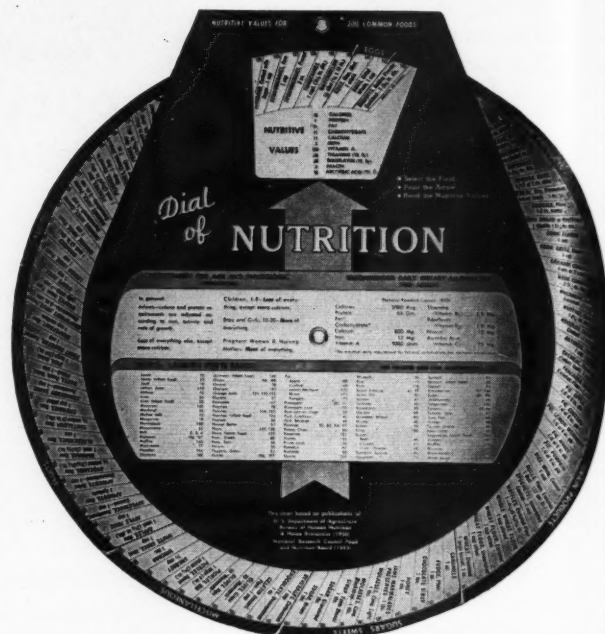
**Patients will thank you
For showing them how to
Dial their way
to HEALTH**



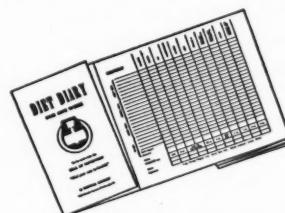
With diet the popular subject of newspaper columns, magazine articles, lectures, and books, the average layman is rapidly becoming nutrition-conscious. Unfortunately, he is also becoming nutrition-confused.

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The DIAL OF NUTRITION is an 11" movable disk, printed on both sides and mounted between two indicator panels so that 10 important nutritional components (and the caloric values) of 200 common American foods may be easily read. We have reproduced above, in full size, one of the two indicators you will find on each chart. You have only to select the food, point the arrow, and read the nutritive values which appear in the indicator slot.



The DIET DIARY is a convenient folder in which each item of food eaten at, or between, meals is recorded for the period of one week. The nutritional components of each food are determined by consulting the DIAL, and then entered in the proper spaces on the DIARY page. At the end of the day, or the end of the week, totals are checked against recommended dietary allowances. (All figures on the DIARY and the DIAL are those determined by the U. S. Department of Agriculture and the National Research Council.)



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ers, in our profession. They are entitled to be better known. Many of our younger dentists have never heard of some of them.

There have been sporadic and earnest attempts made to write biographies of some of our dental leaders. Although the objective was admirable many of these ventures were done by true amateurs who loved the subject beyond their ability to do a creditable job of writing. The literary quality was inferior, often dull and drab in style.

The writing of biography is a special kind of literary skill. A sports writer is not likely to be able to perform the assignment, anymore than a TV repairman would be expected to be able to take an x-ray. The only similarity in their labor is that they are both working with electrical phenomena. Writing is as highly specialized as electronics!

The centennial year of the American Dental Association should be a propitious time to assign a *professional biographer* to the job of writing about our dental leaders of the twentieth century as Leonard Rowntree has done for our medical leaders. The biographer would choose the candidates from the records. Selections should not be made by a committee of dental politicians who are so highly skilled in scratching the backs of each other.

It is unlikely that such a book would be a commercial success. It would be necessary to subsidize the biographer to enable him to carry out his literary research and pay him for the tedious assignment of writing the book. The production costs would be high and the sales limited. Television and motion picture producers would not clamor for the rights. It would be a book created to preserve the traditions of a profession, to record advancements in terms of personalities, to give substance and stature to our professional aspirations.

Dental societies have spent their money on many more frivolous and unproductive projects.

Another Book, Another Author

Coming closer to home and to the

present it is a book by a dentist for other dentists and the public: **OPEN DOOR TO HEALTH** (Devin-Adair) by Fred D. Miller.

This book is one man's story of his fight against tooth decay. It is not a story of laboratory beakers and test tubes, of guinea pigs or white mice. It is the first-hand account of what one dentist believes and does something about in the place where it counts: in his practice.

Anyone who has known Fred Miller and has heard him expostulate on nutrition and dental disease (and no one there is who has spent time with Fred who has *not* heard him on the subject) is aware that here is an earnest and courageous man. Here is a clinician who has taken the nutritional observation on the causes of tooth decay as made by Kirk, Howe, Price, and Page and put them to work
(Continued on page 330)

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Fig. 1. Dentist examining patient at close range during detectability test.

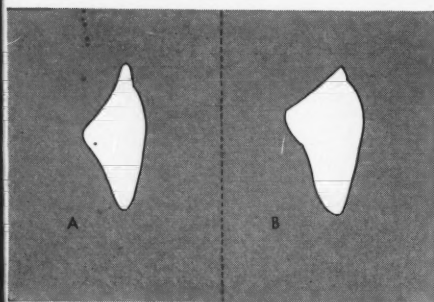


Fig. 2. Dura-Blend now offers choice of profile: (A) Characteristic of new moulds; (B) Typical of many existing moulds.



Fig. 3. New Dura-Blend shade guide has three additional shades. Rugged plastic handles are designed for maximum convenience in matching.

New Moulds New Shades in Dura-Blend

Tested for Detectability

In a series of tests at important dental meetings only 10.7% of the dentists participating were able to accurately distinguish Dura-Blend anterior teeth from natural teeth. Such teeth are clearly undetectable under ordinary conditions. Send for details of test.

New Moulds, New Shades

Thirteen new moulds have been added. Ten upper moulds originally introduced with Myerson's AEsthetic porcelain teeth offer more subtle labial carvings, slender forms and longer ridge lap. Three new lower moulds, short in relation to width, increase convenience in selection.

Three new shades, M61, M65, M69, have been added to increase Dura-Blend's shade-matching superiority. M61 is quite light and bright, M65, similar but darker, and M69, quite grey. New shade guide proved first choice in match to natural teeth 44 percent more often than the shade guide which scored second in this respect.

Proven Durability

Durability of Dura-Blend is unequalled, as proven in over ten years of successful use in hundreds of thousands of cases.

Write today for new Shade Guide
and new Mould Chart. Address:

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can he expect it to keep the rest of his body in good health? Building material that is shoddy for the teeth is shoddy for the liver and heart and kidneys, and for his big toe as well."

"The time comes when no one can see to it that he maintains healthy teeth but the person in whose mouth they grow."

"And if, when physical growth is ended and some of the physical activities of that energetic period are lessened, my patients begin to fall into that characteristic American pattern of overweight their dentist sees ill effects in their mouths almost as quickly as their tailors see the effects in their measurements."

"Everyone may love a fat man, or no one may love him, depending upon the fat man you have in mind. But whatever the love statistics, health statistics for the overweight are not hopeful and neither are their teeth."

"It may take a longer time for other damaged spots in his body to become obvious, but the physiological condition that enables bacteria to eat tooth enamel is not confined to the mouth alone. Our teeth often happen to be the spot where nature chooses to show us the damage first."

"I wonder how long it is going to be before we Americans rise up in defense of our own against food interests who foster misleading, distorted truths that have been an important factor in placing the young people of the richest (in money) nation in the world well beneath the health and endurance standards reached by young people in poorer (in money) nations who we prefer to think are not feeding their children as well as we feed ours."

These brief excerpts from Fred Miller's book will give a few ideas of the tone of his story and of his important *clinical* observations. The sinew, the marrow of dental practice is with the clinician. What he believes and practices determines the standard and the public acceptance of the profession. If the practitioner is a "doctor" (a teacher) as well as a surgeon-technician he is living up to the highest standards of his calling.

—E.J.R.

in his own dental practice.

The dedicated person who believes and then acts on his beliefs in any field of living is admirable. Many of us know or believe in something, but fear to risk ridicule or antagonism to translate our convictions into an action pattern.

It takes courage and persistence to tell people what they do not wish to hear: that pleasant but improper eat-

ing is ruinous to their health. Fred Miller has told this story to people with good humor and in the practical language that people can understand. Here are a few examples of his good sense:

"The American male does not like to be told how to vote or what to eat."

"If a man's food is not good enough to build healthy teeth, how